

No. 4284

BRIEF FOR PETITIONER

IN THE UNITED STATES COURT OF APPEALS
FOR THE SECOND CIRCUIT

No 74-2284

THE SOCIETY OF THE PLASTICS INDUSTRY, INC.,

Petitioner,

v.

OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION,
UNITED STATES DEPARTMENT OF LABOR;
PETER J. BRENNAN, SECRETARY, DEPARTMENT OF LABOR;
AND JOHN STENDER, ASSISTANT SECRETARY
FOR OCCUPATIONAL SAFETY AND HEALTH.

Respondents,

FIRESTONE PLASTICS COMPANY, A DIVISION OF
THE FIRESTONE TIRE & RUBBER COMPANY,

Intervenor,

INDUSTRIAL UNION DEPARTMENT, AFL-CIO

Intervenor.

On Petition For Review Of An Order Of
The Occupational Safety and Health Administration,
United States Department of Labor

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November 12, 1974

BOR 004344

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BRIEF FOR PETITIONER

BOR 004351

PRELIMINARY STATEMENT

This is a Petition for Review of the Vinyl Chloride Regulation, 29 C.F.R. §1910.93q, promulgated by the Secretary of Labor on October 4, 1974. The Secretary of Labor's opinions and a general statement of his reasons for the requirements he would impose on the vinyl chloride industry are set out with the Standard at 39 Fed. Reg. 35890 et seq. (October 4, 1974).

The Petitioner, The Society of the Plastics Industry, Inc. (SPI), is the major national trade association for the plastics industry. The Society is composed of 1400 members and 50 operating units including producers of the plastics raw materials or resins and of the various modifiers and adjuvants used, plastics machinery and mold builders, and those known as processors, converters or fabricators who turn plastic resins into finished components or products. The Society's membership represents over 95% of the plastics materials and machinery produced in the United States and about 75% of the processing volume.

In the United States today, there are 13 vinyl chloride monomer (VCM) producing plants and 36 plants which polymerize the monomer into polyvinyl chloride (PVC) resin. Twenty-two companies representing over 99% of VCM and PVC capacity are active members of the Society's VCM and PVC Producers Committee.

The members of the VCM and PVC Producers Committee include: Air Products and Chemicals Inc., B. F. Goodrich Chemical Company, Borden Chemical Company, Continental Oil Company, Diamond Shamrock Chemical Company, Dow Chemical USA, Ethyl Corporation, Firestone Plastics Company, General Tire & Rubber Company, Goodyear Tire & Rubber Company, Great American Chemical Co., Hooker Chemical & Plastics Corp., ICI North America Ltd., Olin Corporation, Pantasote Company of New York, PPG Industries, Shell Chemical, Stauffer Chemical Company, Tenneco Chemicals Inc., Union Carbide Corporation and Uniroyal Chemical.

In addition, at least 600 of the Society's fabricator and processor members are active in converting PVC into component or end products. The Society's concern with PVC, thus, begins with the manufacture of VCM and carries forward through the polymerization into PVC, and the various fabrication and conversion processes (i.e. calendering, blow molding, extrusion, injection molding, and subsequent finishing operations).

The Society was officially requested to involve itself on behalf of its members in all aspects of the VCM and PVC regulatory situation by its VCM and PVC Producers Committee. Accordingly, it appeared and presented evidence on its behalf at the informal Occupational Safety and Health Administration (OSHA) Hearings conducted June 25 through June 28, 1974 and July 8 through July 11, 1974, submitted

written Comments on the Proposed Permanent Standard; the Draft and Final Environmental Impact Statements; and the study by Foster D. Snell Co., Inc. commissioned by OSHA. Similarly, the Society has been duly authorized by its members to present the industry's case to this Court.]

STATEMENT OF THE ISSUES PRESENTED

1. Whether the promulgation of the Vinyl Chloride Standard was based on determinations by the Secretary of Labor which are unsupported by substantial evidence in the record.
2. Whether, speaking from the technological and economic points of view, the Vinyl Chloride Standard can be complied with by the regulated industry.
3. Whether the Vinyl Chloride Standard is so vague and uncertain in its terms that enforcement of it will violate the requirements for due process under the Fifth Amendment to the U.S. Constitution.
4. Whether the labeling and sign requirements of the Vinyl Chloride Standard fail to comply with the requirements of the Occupational Safety and Health Act of 1970 and are, therefore, unlawful.

STATEMENT OF THE CASE

The ultimate purpose of this Petition for Review by The Society of the Plastics Industry, Inc. (SPI) et al. is to obtain full reconsideration, within the bounds of the appropriate statute, of the standard for occupational exposure to vinyl chloride recently promulgated by the Department of Labor's Occupational Safety and Health Administration (OSHA). ^{1/}

In the production of polyvinyl chloride, vinyl chloride monomer (VCM) ^{2/} is combined with other substances and polymerized into polyvinyl chloride (PVC). The resultant PVC resin is then subjected to further processing into semi-finished or finished products. The uses of polyvinyl chloride are numerous and can best be grouped into five general end-use applications including building and construction; motor vehicles; home furnishings, household goods and apparel; specialty products, primarily consumer goods such as packaging; and miscellaneous products, including hard and soft-ware for medical, agricultural and industrial applications.

1/ 29 C.F.R. §1910.93q; 39 Fed. Reg. 35890, et seq.

2/ Vinyl chloride is a gaseous chemical under ambient conditions. In manufacturing operations, it is refrigerated, under pressure and handled as a liquid. In the context of this proceeding, vinyl chloride is a raw material, more specifically a monomer, used in the manufacture of the polymer, polyvinyl chloride, the second most widely used plastic material.

Polyvinyl chloride is among the oldest of the major plastic materials. The first commercial plant to make polyvinyl chloride resin in the United States was constructed in 1939.

The production of polyvinyl chloride has now grown to the point where its use is almost incomparably ubiquitous; few industries can be found which do not employ equipment, parts, furnishings or the like where PVC is not an integral "ingredient." In 1973, there was an estimated world-wide output of 18 billion pounds and a United States output of 4.6 billion pounds.

In response to information made available to OSHA by the National Institute for Occupational Safety and Health (NIOSH) in January of 1974 that the B. F. Goodrich Chemical Company had reported the deaths of several employees from a rare form of liver cancer called angiosarcoma, OSHA conducted a fact-finding hearing on the possible hazards involved in the manufacture and end-use of both vinyl chloride and polyvinyl chloride. Subsequently, OSHA was informed of deaths from angiosarcoma among workers employed by the Firestone Plastics Company, the Goodyear Tire & Rubber Company, and the Union Carbide Corporation.

The human deaths from this form of liver cancer and information adduced at the fact-finding hearing about the possibility of inducing the same disease in laboratory

animals, particularly data presented by Professor Cesare Maltoni of Bologna, Italy, led OSHA to conclude that the inhalation of vinyl chloride is carcinogenic for humans and must be considered carcinogenic for man at the same level as for animals.^{3/}

By publication of an Emergency Temporary Standard on April 5, 1974 OSHA lowered its limitations on vinyl chloride exposure from a ceiling of 500 parts per million (ppm) to a ceiling of 50 ppm.^{4/}

Having received additional animal data from Industrial Bio-Test Laboratories of Northbrook, Illinois indicating that angiosarcoma could be induced in test animals at 50 ppm, on May 10, 1974 OSHA proposed a permanent occupational exposure standard for vinyl chloride at a "no detectable" level which was defined as not detectable with a sampling and analytical method capable of measuring concentrations of 1 ppm.^{5/}

In the explanatory statement accompanying the OSHA Proposed Permanent Standard, it was made quite clear that-- in keeping with the general policies of the Agency, and the legislative intent of the Occupational Safety and Health Act of 1970 (OSH Act) (both of which place great emphasis on

^{3/} 39 Fed. Reg. 12342, et seq. (Emergency Temporary Standard).

^{4/} 29 C.F.R. §1910.93q(b); 39 Fed. Reg. 12343.

^{5/} 29 C.F.R. §1910.93q(a), (c); 39 Fed. Reg. 16897 (Proposed Permanent Standard).

imposing the burden of providing safe work places on employers, not employees) ^{6/} --the Secretary's intention here was

to require or permit the use of respirators as nothing more than a stop-gap or supplementary measure.

The following statement by the Secretary certainly bespeaks recognition therein that the wearing of respirators is a nearly intolerable burden on employees and can present significant health hazards so that any standard which would require the full-time use of respirators would have to be considered an extreme measure:

"Accordingly, it is proposed to require the institution of engineering controls and of workpractice methods as soon as feasible, and to require the use of respirators pending the institution of such controls, to supplement such controls where they are insufficient to reduce concentrations of vinyl chloride below the detectable level, in specified work situations, and in cases of emergency." ^{7/}

If further proof were needed that it was never the intention of the Department of Labor to resolve the vinyl chloride monomer problem by requiring full-time use of

^{6/} The general duty clause of the OSH Act, which sets the tone of the whole statute, explicitly states "[e]ach employer shall furnish...a place of employment...free from recognized hazards...." OSH Act §6(a)(1); 29 U.S.C. §654(a)(1). What is more, the Senate Report stated "[e]mployers have primary control of the work environment and should insure that it is safe and healthful." Sen. Rep. No. 91-1282, 91st Cong. 2d Sess. (1970); 3 U.S. Code Cong. & Admin. News 5186 (1970).

^{7/} 39 Fed. Reg. 16897.

respiratory equipment, such proof is to be found in the explanatory statement made by the Secretary when the Permanent Standard here under attack was published. In the portion of the statement of conclusions based on the record enunciated by the Secretary, it was stated as follows:

"We would agree that respirators have many drawbacks; the proposal did not contemplate them as a final solution." 8/

After publication of the Proposed Permanent Standard, a record was developed with regard to a number of facts and related issues raised by the proposal. Purportedly basing his conclusions upon the facts in this record, the Secretary of Labor promulgated the permanent occupational exposure standard for vinyl chloride now before this Court for review. 9/

Specifically, the Standard sets permissible exposure limits for occupational exposure to VCM and requires employers to meet these exposure limits.

The evidence adduced in the Record shows that the exposure limitations are both technologically beyond the compliance capabilities of the industry and that human experience data shows such low levels are not required to protect industry employees. Where the feasible engineering and work practice controls are not sufficient to reduce exposure

8/ 39 Fed. Reg. 35894.

9/ 29 C.F.R. §1910.93q; 39 Fed. Reg. 35890, et seq.

to these permissible levels, the Standard specifies that particular types of respirator equipment must be supplied to employees to supplement engineering and work practice controls designed to reduce occupational exposure to VCM.

Thus, unfortunately, while it is clear that the original proposal did not contemplate the use of respirators on a full-time basis and neither the government nor industry had any reason to believe that OSHA might adopt a standard which would have the effect of requiring full-time use of respirators, the final Standard will have precisely this effect. This is because the only evidence of record demonstrates the infeasibility of any vinyl monomer or polyvinyl chloride resin company reaching the permissible exposure standard; thus, full-time respirator use is actually what is being mandated, in effect, although the Secretary may be unable or unwilling to recognize this fact.

It might be noted in passing that, had the Secretary recognized that the practical effect of the imposition of the Standard would be to require inordinate and concededly hazardous overuse of respirators, there might have been adequate notice given in this respect, and the government might have produced testimony to justify its position that full-time use of respirators is feasible and will not create greater hazards for employees than that to which they are now subjected. As it is, all of the testimony in the Record including that

of the government's expert witness is to the effect that full-time use of respirators is not feasible, and might well present a greater hazard to employees than the type of very limited exposure to vinyl chloride monomer industry has advocated.

Moreover, the various types of respirators prescribed in the Standard were neither designed for, nor are they practical for use over long periods of time. As a practical matter, the operation of a chemical plant is not feasible if employees are encumbered by respiratory protective equipment.

Furthermore, because of inherent respirator limitations, detailed in the Record, many employees cannot use this equipment because of current health conditions or problems that would be caused by long term respirator use.

Additionally, the required respiratory equipment is not available in sufficient supply. Without respirators to "supplement" engineering and other controls, the industry will not be able to operate under the new Standard. A "Petition for Stay of Effective Date of Standard" filed with OSHA on November 5, 1974 contains more detailed information in this respect.^{10/}

The scope and application of the Standard cover all three segments of the industry and secondary service-type

^{10/} Since this Petition was filed after designation of the Record to this Court, a copy of the Petition and its appendices are included in this Brief as Appendix B.

industries as well.

The Standard, as written, would result in its application to fabricators, processors, the transportation industry, warehousing and the like. Actually, for "downstream operations," in almost all cases the danger of exposure to VCM is remote because they do not use vinyl chloride monomer, per se; they use or handle only the polymeric resin which contains some low levels of residual VCM. Nevertheless, at every location where VCM or PVC is manufactured, reacted, packaged, repackaged, stored, handled or used and where employees may be exposed to more than 0.5 ppm of VCM, the employer must monitor individual employee exposure.

The Standard also mandates labeling for regulated areas and all containers of VCM or PVC. The central feature of the required labeling is the term "cancer-suspect agent." The Standard does not require the type of "information labeling" generally prescribed in similar situations, e.g. as with asbestos, now governed by a separate OSHA Standard.

The Secretary apparently did not consider the impact this Standard would have on the country's economy as a whole in his decision making process. Evidence was presented to show that if the industry were closed down, enormous displacements both in terms of jobs and national economics, would occur.

SUMMARY OF THE ARGUMENT

The Occupational Safety and Health Administration of the United States Department of Labor promulgated an occupational exposure standard for vinyl chloride which would severely restrict the permissible employee exposure to vinyl chloride by setting, in effect, a "no detectable" limitation on exposure. It is now clear that the only way this limitation can be achieved would be by requiring the continuous use of respirators in most vinyl chloride monomer and polyvinyl chloride resin plants and by placing other unwarranted and intolerable burdens on the monomer and resin manufacturers and their employees. The Secretary's principal basis for taking such extreme action was an essentially arbitrary "policy judgment" that the Standard, as written, is necessary, though reaching the exposure limitations is, for all practical purposes, conceded to be infeasible with present or foreseeable engineering practices or technology. Moreover, in making the judgment the Secretary does not forthrightly concede that the Department is effectively mandating the full time use of respirators; on the contrary, it appears that this effect is not what was intended at all. It therefore appears that the adverse effects of full time respirator use were probably weighed seriously only by industry.

In making his determinations on the health issues in the case, the Secretary repeatedly characterized the evidence in the Record as "uncertain," using this wholly negative contention to justify taking an inordinately severe position. In short, the Secretary used an alleged evidentiary void to justify a decision without a factual basis upon a reading of the Record as a whole.

The Standard for judicial review of an Occupational Safety and Health Act Standard is the "substantial evidence" test. Associated Industries of New York State, Inc. v. United States Dep't of Labor, 487 F.2d 342 (2d Cir. 1973). The Secretary not only lacked evidence for his determinations on the need for and feasibility of the exposure levels adopted, and important aspects of the respirators and monitoring systems requirements, but there was an abundance of evidence of Record militating in favor of almost completely contrary conclusions. An examination of the evidence does not show that a virtual "no detectable" exposure level is either achievable or necessary to protect workers; that the polyvinyl chloride fabricators, transporters and warehousemen need to be regulated; or that the presently prescribed exposure levels and respiratory protection requirements can be achieved technologically, or provided in a timely fashion.

Feasibility of achievement, both technological and economic, is an indispensable statutory consideration for

the Secretary in Occupational Safety and Health rule making. OSH Act §6(b)(5); Industrial Union Dep't, AFL-CIO v. Hodgson, 499 F.2d 467 (D.C. Cir. 1974). The Secretary is prohibited from promulgating a standard which will have the effect of removing employers from business by saddling them with unattainable or vague standards which a Record shows are technologically impossible to meet; obviously, if one cannot foresee any certainty of achieving a goal set by the Secretary but is required to continue expenditures with or without reasonable hope of success, as is the case here, the Standard is not technologically feasible within any rule of reason.

The Secretary also failed in his obligation to promulgate a standard which men of reasonable intelligence could understand. Since many provisions of the Standard are so inartfully drawn that a reasonable man cannot know what they mean in terms of practical application, the Standard should be declared void as vague and unenforceable.

As a final requirement to be placed on those who would be controlled by the Vinyl Chloride Standard, the Secretary set out labeling requirements. Over objections and ignoring entirely the constructive alternative proposals of SPI and others, the Secretary would require labeling which focuses only on the name of the product, vinyl chloride, and the words "Cancer Suspect Agent."^{11/} The mandate of Congress

^{11/} 29 C.F.R. §1910.93q(1); 39 Fed. Reg. 35898.

in enacting the Act was to require instructive labeling which would provide information on how to deal with the hazard and prevent injury. OSH Act §6(b)(7); 29 U.S.C. §655(b)(7). In this aspect, also, the Secretary exceeded the scope of his statutory authority, abused his discretion, and, thus, promulgated an unlawful standard.

The Secretary also stepped beyond the bounds of his authority by extending his labeling requirements to all containers of VCM, i.e., even containers of VCM in interstate transportation would be subject to his labeling. The Secretary's authority to regulate occupational safety and health does not include areas where other Federal agencies have established standards, OSH Act §4(b)(1); 29 U.S.C. §653(b)(1), and the Department of Transportation has already set labeling standards for the transportation of vinyl chloride.^{12/} Thus, the Standard is unlawful insofar as it purports to directly affect the labeling of VCM containers in transportation.

^{12/} 49 C.F.R. §§172.5, 173.400, .402, .404, .407.

ARGUMENT

I

TO BE SUSTAINED IN THE PROMULGATION OF A STANDARD SUCH AS THE ONE HERE IN ISSUE, THE SECRETARY OF LABOR MUST DEVELOP A RECORD, CAREFULLY ELUCIDATE FINDINGS BASED ON THE RECORD, AND REACH CONCLUSIONS THAT RESULT IN A STANDARD WHICH IS FEASIBLE; HIS FAILURE TO MEET THESE BASIC REQUIREMENTS IN THIS CASE MAKE THE PROMULGATION OF THE STANDARD UNLAWFUL AND INVALID.

Before a standard for occupational safety and health may be promulgated by the Secretary of Labor a specific rule making procedure must be followed^{13/} and "[t]he determinations of the Secretary shall be conclusive [only] if supported by substantial evidence in the record considered as a whole."

OSH Act §6(b) and (f); 29 U.S.C. §655(b) and (f); and 29 C.F.R. §1911.18(b) (emphasis added).

In promulgating Occupational Safety and Health Regulations, "substantial evidence" has been held to be the appropriate standard for review of the Secretary of Labor's action even when it results from an informal rule making procedure. Associated Industries, supra, at 342.^{14/} Thus, the Courts

^{13/} This procedure includes notice, development of a record including an informal factual hearing if requested, and, if the Standard is adopted, incorporation in the rule making notice of a concise general statement of its basis and purpose.

^{14/} For the application of the "substantial evidence" rule to other forms of adjudicative determinations by the Occupational Safety and Health Administration, see, Florida Peach Growers Association Inc. v. United States Dep't of Labor, 489 F.2d 120 (5th Cir. 1974) and National Realty and Construction Co. Inc. v. Occupational Safety and Health Review Commission, 489 F.2d 1257 (4th Cir. 1973).

have recognized that Congress expected the Secretary to exercise his rule making power on the basis of "substantial evidence" contained in the record; the law does not contemplate the making of critical decisions based on administrative fiat or unfounded "beliefs" as to what industry might be able to accomplish.

The term "substantial evidence" has been defined succinctly as "...such relevant evidence as a reasonable mind might accept as adequate to support a conclusion." Universal Camera Corp. v. NLRB, 340 U.S. 474, 477 (1951); Associated Edison Co. v. NLRB, 305 U.S. 197, 229 (1938) (emphasis added).

It "must do more than create a suspicion of the existence of the fact to be established....it must be enough to justify, if the trial were to a jury, a refusal to direct a verdict when the conclusion sought to be drawn from it is one of fact for the jury." Universal Camera, supra, at 477; NLRB v. Columbian Enameling and Stamping Co., 306 U.S. 292, 300 (1938). The test, therefore, is not one of simply finding something, however isolated, in the record to support the agency's determination. An examination of the whole record is necessary to see if the agency has met its evidentiary burden of bringing reliable and determinative facts to light, thereby enabling it to make responsible decisions. Clearly this is what Congress had in mind since it was and is well recognized that OSHA's actions can affect the lives

and jobs of millions of people--this case is an excellent example of how much can be at stake.^{15/}

In promulgating Occupational Safety and Health Standards, the Secretary is mandated by the statute to make his determinations on the "best available evidence" so that his decisions will withstand scrutiny under the substantial evidence test. Standards must be developed based on research, demonstrations, experiments and other appropriate information and, along with employee safety and health, the considerations to be weighed must also include the latest available scientific data, the feasibility of the Standard, and the experience gained under all health and safety laws. OSH Act §6(b)(5); 29 U.S.C. §655(b)(5).

Such a critical inquiry into the evidentiary basis for the Standard promulgated by the Secretary is one Congress determined the Courts must undertake to provide an effective check on his performance of the exceptionally broad regulatory duties delegated to him under the statute. Absent such a review, there would be no way to bar arbitrary use of the

^{15/} Joint Appendix (hereinafter referred to as: "JA") 2589 and 2617: The report of A.D. Little, Inc., an economic impact analysis of the effect of a "no detectable" exposure limit on the VCM and PVC industries, indicated that a shut down of all PVC resin plants in the United States and unavailability of PVC resin could result in a loss of 1.7-2.2 million jobs. A report by General Motors Corporation indicates severe reductions in VCM production would directly affect 45,000 GM employees and that the ripple effect, that is, GM-related layoffs alone, could reach 1.8 million workers. JA 2359.

Occupational Safety and Health Administration's virtually plenipotentiary powers over industry and its employees.

Section 6(b) (5) of the OSH Act states that "[t]he Secretary shall set the Standard which most adequately assures, to the extent feasible, on the basis of the best available evidence, that no employee will suffer material impairment of health or functional capacity...." 29 U.S.C. §655(b) (5) (emphasis added).

Senator Javits, who authored the amendment which inserted the phrase "to the extent feasible" in the OSH Act, explained its meaning as follows:

"As a result of this amendment the Secretary in setting standards, is expressly required to consider feasibility of proposed standards. This is an improvement over the Daniels bill, which might be interpreted to require absolute health and safety in all cases regardless of feasibility, and the Administration bill, which contains no criteria for standards at all."

S. Rep. No. 91-1282, 91st Cong. 2d Sess. (1970);
3 U.S. Code Cong. & Admin. News 5222 (1970).

The statutory language has been interpreted to mean that the Secretary cannot "...[put] employers out of business--either by requiring protective devices unavailable under existing technology or by making financial viability generally impossible." I.U.D. v. Hodgson, supra, at 467. Thus, the feasibility requirement can have two aspects--one technological and the other economic.

It is clear that the regulated industry's ability to achieve feasibly a given requirement is a primary matter for consideration by the Secretary which cannot be ignored. Thus, if employers are unable to comply with a standard because of a lack of existing technology or an exorbitant cost which would drive them from the market, that standard is unlawful because it contravenes the dictates of the statute.

Petitioners submit that this Court's examination of the Standard for occupational exposure to vinyl chloride and the bases on which it was finally promulgated will reveal that the Secretary did not reach the critical conclusions he has enunciated on the basis of the best available evidence taken from the record as a whole. Likewise it is submitted that the Secretary did not make rational findings or conclusions on the major technological feasibility or employee health issues hereinafter discussed and, hence, has promulgated a standard which is unlawful and invalid.

II

THE RECORD BEING DEVOID OF A SCINTILLA OF EVIDENCE TO SUPPORT THE TECHNOLOGICAL FEASIBILITY OF ACHIEVING THE EXPOSURE LIMITS IN THE VINYL CHLORIDE STANDARD, THE REAL EFFECT OF ADOPTION OF THE STANDARD WILL BE TO COMPEL FULL-TIME USE OF RESPIRATORY PROTECTION BY THE WORK FORCE; THE ONLY EVIDENCE OF RECORD INDICATES THAT THIS RESULT WILL MAKE SAFE PLANT OPERATION TECHNOLOGICALLY INFEASIBLE AND BE DETRIMENTAL TO EMPLOYEE HEALTH.

In promulgating a standard dealing with toxic materials or harmful physical agents, the Secretary is required to set a standard which, to the extent feasible, most adequately assures no employee will suffer impaired health or functional capacity. OSH Act §6(b)(5); 29 U.S.C. §655(b)(5) (emphasis added). Feasibility in this sense must take into account the technological possibilities of achieving compliance with a standard as well as any adverse impact on employee welfare that adoption of a standard might have.

^{16/}
I.U.D. v. Hodgson, supra, at 477-78.

^{16/} Daniel P. Boyd, Ph.D., Director of OSHA Office of Standards Development, defined feasibility in exactly the same terms during the June hearings:

"Some commentators have asked what 'feasible' means. Within the terms of this proposal, feasibility refers to both technological and economic considerations. On the one hand, does the technology exist that would allow the employer to achieve compliance and, on the other, what are the costs associated with the application of these technologies. It is both proper and necessary that we consider these matters in our deliberations." JA 178.

In the course of the fact finding process, the Secretary recognized the evidentiary importance of the feasibility issue and directed that a special technological and economic feasibility study be conducted by Foster D. Snell Company to determine the technological and economic feasibility of compliance with the original Proposed Permanent Standard and several other exposure levels intermediate between the proposed "no detectable" and the Emergency Temporary Standard limit of 50 ppm as a ceiling exposure.^{17/}

With both the OSHA-commissioned Snell report and a plethora of industry evidence before him, all clearly indicating that compliance with a 1 ppm level is not technologically feasible, the Secretary nevertheless concluded:

"We also believe that PVC and VC establishments will, in time, be able to attain that level [1 ppm time weighted average (TWA)] through engineering controls, and that fabricators can do so in the immediate future." ^{18/}

The Secretary candidly recognized "...that many employers covered by the Standard cannot currently achieve compliance with permissible exposure limits solely by the use of feasible engineering and work practice controls," and "...agree[d] that the PVC establishments will not be able to

^{17/} 39 Fed. Reg. 30844 and 39 Fed. Reg. 35890.

^{18/} 39 Fed. Reg. 35892.

attain a 1 ppm TWA level for all job classifications in the near future."^{19/}

It is respectfully submitted that in discussing the Snell Report alone, the Secretary summarized the evidence as showing that a 1 ppm standard for exposure to vinyl chloride cannot be feasibly attained, contrary to his "belief," by noting:

"...the Snell study on technological feasibility concluded that a 1 ppm ceiling is not feasible for the VC and PVC industries with present technology, but that the VC industry could currently attain lower exposure levels than the PVC industry. ^{20/}

Ample evidence that compliance with a "no detectable" level, i.e. a level around 0-1 ppm, is technologically infeasible to achieve had already been introduced into the Record by industry spokesmen ^{21/} before the Snell Report confirmed that

^{19/} 39 Fed. Reg. 35892-93.

^{20/} 39 Fed. Reg. 35892

^{21/} See, e.g., the statement of Anton Vittone of the B. F. Goodrich Company speaking for the Petitioner, SPI, JA 560, Joseph Fath, Tenneco Chemicals, JA 745, Richard Fleming, Air Products, JA 932-33, Karl Oelfke, Dow Chemical, USA, JA 1034-35, Harry E. Connors, Diamond Shamrock, JA 1318-19, John L. Nelson, B. F. Goodrich, JA 1381, Martin J. Kleinfeld, Uniroyal, JA 1576, and Todd C. Walker, Firestone Plastics, JA 1668. Accord, Borden, Goodyear, Hooker, Pantasote, Stauffer, and Union Carbide. JA 2342, 2300, 2285, 2701, 2371 and 2422, respectively.

a time weighted average (TWA) level around 10 ppm for the VCM industry and around 25 ppm for the PVC industry was the lowest exposure level feasible with presently available technology.^{22/} This evidence has yet to be contradicted by even a scintilla of probative data leading to any other possible conclusion regarding realistically feasible exposure levels.^{23/}

From the foregoing, it cannot be said that the evidence in the Record is uncertain or unclear as to whether industry can feasibly reduce occupational exposure to VCM to the 0-1 ppm range. The OSHA consultant, Snell, and industry spokesmen must be considered as having provided the best available evidence on technological compliance since their input was based on actual engineering calculations and voluminous expert opinion which is essentially uncontradicted on the Record. Nevertheless, the Secretary made his subjective determination supported only by a statement that it is his "belief" that industry, with the development of new technology, engineering and work practices, will continue

^{22/} "Economic Impact Studies of the Effects of Proposed OSHA Standards For Vinyl Chloride," a report done by Foster D. Snell, Inc. under OSHA Contract No. L/A 74167 (hereinafter referred to as the "Snell Report") JA 3683.

^{23/} As the Secretary did point out, however, the labor unions and the Health Research Group, neither of which had conducted any studies or professed expertise of any relevant type, "suggested" that a 1 ppm ceiling level is attainable. 30 Fed. Reg. 35892.

to make "great strides in reducing exposure levels."^{24/}

The inescapable fact is that there is no probative evidence to support the Secretary's determinations as to the technological feasibility of achieving compliance with the permissible exposure levels. The evidence clearly demonstrates that the Standard is simply beyond the compliance capabilities of the industry. Thus, the Secretary's decision on the permissible exposure limits lacks substantial evidentiary support in the Record, is unlawful, and should be declared invalid.

The net effect of the Secretary's action in adopting the instant Standard will be to require that virtually all

^{24/} 39 Fed. Reg. 35892. The Secretary's confidence that industry can eventually reach the exposure levels he would require is sheer speculation in its worst form. The decision itself is contrary to all known facts and saddles those who suffer the brunt of the conjecture with the personal and economic cost of the Secretary's error. By speculating that his Standard can eventually be reached, the Secretary has put the VCM and PVC industry on a treadmill to oblivion with a continuous cycle of money for new engineering controls, new plans to attempt to further reduce exposure, more money for different--not necessarily better--engineering controls to attempt to further reduce exposure, ad infinitum. It should also be noted that the Secretary's opinion vacillates on the facts in issue. Specifically, he states that he "believes" that "in time" the industry can achieve compliance with the permitted levels (39 Fed. Reg. 35892) but that he is "...presently unable to determine when it will be feasible for most establishments to reduce exposure levels to the permissible level," (39 Fed. Reg. 35894) "[n]or is it clear to what extent exposures can be feasibly reduced." (39 Fed. Reg. 35892). Yet industry will be expected to spend untold sums and search indefinitely to satisfy the Secretary's unfounded confidence that it can locate something akin to the Fountain of Youth.

of the work force in a vinyl chloride or polyvinyl chloride plant be equipped with and actually use respiratory protective equipment on essentially a full-time basis. As indicated in the Statement of the Case, it is clear that the Secretary never intended this result. Yet, the Record facts in the case lead inexorably to the conclusion that the Secretary's permissible exposure limit concept is so clearly unachievable by industry that the only practical way to comply with the law will be by supplying respiratory equipment to every employee in a VCM and PVC plant. Moreover, it is likely that many of the workers will have to wear the respirators full-time immediately after January 1, 1975.^{25/}

The Secretary expressed the hope that other methods of protection could be found and failed to address the real issue: Is it feasible to operate a plant at all if full-time use of respirators is a prerequisite? The Secretary's allusion to the "many drawbacks" associated with the use of respirators does not begin to satisfy that requirement in the Department's own regulations which directs that a Standard be accompanied by a statement which "...will show the

^{25/} For example, one witness testified that, if the Proposed Permanent Standard were effectuated, "[w]e would have to place all operating and support personnel at our PVC manufacturing sites in respirators all of the time" (emphasis added). JA 821.

significant issues which have been faced, and will articulate the rationale for their solution."^{26/} The Secretary's failure to provide anything more by way of explanation in a similar situation caused this Court to vacate another OSHA standard, saying "...we must insist on something more than an ipse dixit, now sought to be supported by references by [government] counsel...." Associated Industries, supra, at 354. See also, Automotive Parts & Accessories Association v. Boyd, 407 F.2d 330, 338 (D.C. Cir. 1968).

The evidence of record lends no support to the view that such operation would be feasible or safe, even assuming an adequate work force, eligible and willing to function in respirators, can be secured. Indeed, the Record compels the opposite conclusion, i.e. that such operation is infeasible.^{27/}

Once it is recognized that the Secretary's decision on the permissible exposure limitations makes extensive use of respiratory equipment a practical necessity, regardless

^{26/} 29 C.F.R. §1911.18(b).

^{27/} In addition to the fact that the full-time use of respirators violates good industrial hygiene practices, more than intermittent use is impractical because new and unnecessary safety problems are created, the work force tires from increased breathing effort and exertion expended in carrying air tanks or coils of air hose, and, typically, the employees tend to become "accident prone," and otherwise inefficient as a result of fatigue. JA 285, 293, 538, 722 F-G, 741, 822, 848-50, 964-65, and 1331-33.

of what the Secretary might have intended or now hopes or "believes," much greater attention must be given to the testimony in the Record indicating that very real dangers of an immediate nature are necessary concomitants to the use of such equipment.^{28/} Firstly, respirators can, in and of themselves, create a safety hazard in work areas because of their bulk and, in some cases, the inherent nature of the equipment particularly where it is of the air line variety.^{29/} Actually, all of the evidence indicates clearly that the use of respiratory equipment gives rise to serious health and safety considerations which might well be viewed as presenting more acute problems and warranting greater concern than exposure to very low levels of air contaminants.

^{28/} The testimony of Hyatt (JA 283 through 312), Soule (JA 722-G) and Dr. Tomashefski (JA 524 through 535) indicates that supplied air respiratory protection devices--that is, both self contained and air line types--are designed for and should be used only in situations that are immediately hazardous or very hazardous to life, respectively, and that neither is appropriate for routine or day-to-day use.

^{29/} The specific safety hazards referred to by the expert witnesses are: as to the devices themselves--air contamination, device malfunction (e.g. failure or disconnection), and air source malfunction (e.g. shutdown); as to the use of the devices--tripping and falling over air lines, air line tangling (especially if line is of great length), kinking and shutting off air, mobility restriction, restricted sight (including fogging of the eyepieces), restricted hearing, and restricted voice communications. JA 312, 527, 528, 552, 715, 716, 740 and 794.

That the use of respiratory equipment can lead directly to severe injury is almost self-evident. This is particularly true where such equipment must be employed in complex industrial manufacturing establishments. As a representative of Tenneco pointed out during the course of the OSHA Hearing, workers burdened with bulky breathing equipment or trailing long hoses can find themselves in serious jeopardy in a vinyl chloride facility which, typically, is "a multi-story operation [with] many catwalks or narrow passageways, stairwells, [and] moving machinery."^{30/} Tenneco's representative had reason for being particularly impressed with the hazards involved for he was aware that his company had had at least one employee fatality which occurred when a worker wearing breathing apparatus connected to a lengthy air hose fell from a ladder due to the cumbersome nature of the respiratory equipment.^{31/}

Considerable industry testimony demonstrates that full-time use of respirators is impractical. All testimony on this topic indicated that respiratory protection devices were designed for short term use, that is, 15 to 60 minutes.^{32/}

^{30/} JA 847-48.

^{31/} Id.

^{32/} See testimony of Edwin C. Hyatt (JA 298-303); Joseph A. Tomashefski, M.D. (JA 535-E and 539); Roger A. Strassburg, Ph.D. (JA 722-H); Paul Lobo, Ph.D. (JA 793); and Karl Oelfke (JA 1112).

Even the government's witness in this area, Mr. Edwin C. Hyatt, a recognized expert in the field, testified that no one could work in a respirator effectively for long periods of time.^{33/}

Mr. Hyatt very forcefully noted that "[a]t best, any of these devices are [sic] an instrument of torture."^{34/}

In addition to the Hyatt testimony, the other evidence of record leaves no doubt but that a serious and properly directed evaluation of the risk-benefit ratio between respiratory protection and very low level vinyl chloride monomer exposure (e.g., the 10 ppm TWA, 25 ppm maximum recommended by the Snell Report) should have been undertaken by the Secretary prior to the setting of an arbitrarily derived exposure limitation which would have the effect of mandating full-time use of respiratory protection. Were this done, at least the Court would be in a position to know that the Secretary had consciously balanced the admonitions given by experts such as Drs. Tomashefski and Soule against the taking of an action which would require, as a practical matter, the use of respiratory protection on a full-time basis. Dr. Tomashefski pointed out, for example, that even with respect to those who can wear respiratory protection, it being understood

^{33/} JA 298.

^{34/} JA 303.

that somewhere in the neighborhood of 32% of the work population should not wear such equipment under any circumstances because of chronic obstructive pulmonary disease,^{35/} those who are forced to wear respirators will have difficulty because of "increased resistance to breathing, decreased efficiency of function, poor fit, leakage, false security, allergic reactions, irritation from perspiration and other particulate depositions, rebreathing, head space ventilation, poor vision, fogging of eye pieces, speech, psychological and contamination problems."^{36/}

The difficulties with respiratory equipment highlighted by Dr. Tomashefski and the other experts in this field are known to have led to serious accidents, particularly in industries where fire and explosion are the most common concerns. For example, an incident at a Diamond Shamrock PVC plant in Texas was widely reported in 1970. When a valve gasket failed, an operator immediately observed the potential hazard and loudly ordered all in sight to evacuate. Seconds later there was indeed a fire and explosion which led to the death of one worker and severe injury to several others.

^{35/} JA 532.

^{36/} JA 534. Roger W. Strassburg, Ph.D., added the following to Dr. Tomashefski's list: headaches, inflamed facial glands, edema of the scalp, drying of the eyes and general skin irritation. JA 724-27.

Had either the vision, the hearing, or the capability for verbal communication of the operator been impaired because of the use of respiratory equipment, or had the mobility of the workers compelled to evacuate been impeded, many more lives would certainly have been lost.

Such incidents leave no doubt but that the virtual full-time wearing of respiratory protection which the Secretary's action has now made a necessity can present serious threats to health and safety. Despite this fact, the Secretary, still relying on his "belief" that respirators may not be required indefinitely, dismisses the subject with the cursory observation that the use of respiratory protection will only be "...inconvenient, may require additional personnel, interfere with production, or may require extensive retraining of employees and restructuring of work practices."^{37/} Nothing is said about the employees that may have to be laid off or might become chronically ill because the full-time use of respirators will have been made mandatory as a practical matter.

The point here is that the Secretary's decision does not give any assurance that the evidence of Record was weighed in the correct factual context. While the Secretary may have said that careful consideration was given to the

^{37/} 39 Fed. Reg. 35894.

inconvenience involved in respirator usage, the decision does not reflect recognition that the usage might need to be constant so that health and operational feasibility considerations needed to be weighed with this prospect in mind.

Finally, the Secretary ignored the fact that it will be wholly impossible for industry to obtain a sufficient supply of the respiratory equipment now required if the Standard is allowed to become effective on January 1, 1975. A full explanation of this problem was presented to OSHA in the "Petition for Stay of Effective Date of Standard" referred to in the Statement of the Case in this brief. (A copy of the Petition is included herein as Appendix B.)

By way of a brief recap of the said Petition, the main point is that because of the great demand and an inadequate supply, it is physically impossible for the VCM and PVC industries to equip themselves with an adequate number of approved respiratory protection devices by January 1, 1975. In fact, not only is the designated equipment not available in sufficient supply, many of the devices specified for use have not as yet and will not be approved by January 1, 1975; they may never be approved. Even if these approvals were in hand, a sufficient supply of the respiratory equipment required could not be made available to the industry in sufficient time for it to comply with the Standard by its

present effective date.^{38/}

With the breadth of the application of the Standard encompassing fabricators, compounders, the transportation industry, and warehousing as well as the VCM and PVC manufacturers, the demand by industry at large for respiratory protective devices must be expected to escalate. Additionally, it is also certain that some parties regulated by the Standard, especially small firms, will not be able to afford to equip their employees with the required respiratory protective devices.^{39/}

In summary, it is respectfully submitted, that despite the unrealistic and unfounded optimism expressed by the Secretary regarding anticipated engineering achievements, the net effect of the Permanent Standard will be to require full-time use of respiratory equipment by the industry's work force. It is further submitted that the Secretary's failure to evaluate adequately either the feasibility of operations under these conditions, the availability of the respiratory equipment needed, or the impact on the health (or availability) of employees that full-time use of respirators would entail, warrants reversal and reevaluation of the Secretary's action in adopting the Vinyl Chloride Standard.

^{38/} Appendix B and attachments thereto.

^{39/} Id.

III

THE RECORD AS A WHOLE DOES NOT CONTAIN
SUBSTANTIAL EVIDENCE TO JUSTIFY APPLICATION OF
THE STANDARD TO FABRICATORS OR PROCESSORS OF PVC
RESIN, MANY OF WHICH WOULD FIND IT
ECONOMICALLY INFEASIBLE TO COMPLY.

As to its scope, the Standard would apply to the
manufacture, reaction, packaging, repackaging, storage,
handling or use of VCM or PVC and regulates access to areas
where VCM concentrations are in excess of the permissible
exposure limits.^{40/}

In explaining the scope of the Standard, the Secretary
points out that the industry is divided into three segments
which include VCM production, PVC or polymer production, and
fabrication. As to the fabrication of PVC, the Secretary
points out that a variety of techniques are used to form a
finished product and that this portion of the industry ac-
counts for the vast majority of employees whose employers
range in size from those with a few employees to more sophis-
ticated firms with larger work forces.^{41/}

Responding to an industry suggestion that PVC fab-
ricators, processors and the like be exempt from the Stan-
dard inasmuch as they are already regulated by the more

^{40/} 29 C.F.R. §1910.93q(a)(2) and (e); 39 Fed. Reg. 35896.

^{41/} 39 Fed. Reg. 35890.

applicable clean air standards,^{42/} and, further, because their exposure to VCM was known to be minute and controllable by existing engineering and work practice controls, the Secretary responded that it would be imprudent to grant a blanket exemption for fabricators because the Record evidence shows that at least some employees in that segment of the industry may be exposed in excess of the 1 ppm permissible exposure level.^{43/}

The evidence of the Record shows that the fabricators and processors do not use VCM. They use only PVC resin and are, thus, in an inherently less susceptible position with regard to exposure. In fabricating and processing plants, the only potential exposure is from low levels of residual VCM present in the PVC.^{44/} Because of this, PVC fabricators and processors have very low levels of exposure in their

^{42/} 29 C.F.R. §1910.93.

^{43/} 39 Fed. Reg. 35892. Acknowledging that most, if not all, fabricators currently have levels of 1 ppm over an 8 hour period or are capable of reaching the permitted exposure levels through known engineering controls in the immediate future, the Secretary nevertheless would include fabricators in this Standard and require them to conduct at least initial monitoring. 39 Fed. Reg. 35892-93.

^{44/} By means of explanation, when vinyl chloride is converted to polyvinyl chloride a very small portion of the vinyl chloride, that is, generally less than 0.1%, remains unreacted in the polyvinyl chloride.

operations. In almost every case reported, the occupational exposure was less than 1 ppm.^{45/}

In addition to already inherently low exposure levels controllable by known engineering and work practices, this Standard confronts PVC fabricators and processors with a very serious economic feasibility problem. This segment of the industry is, in large part, composed of many smaller firms with few employees that, from a purely economic point of view, could not afford the costs of compliance with the Standard. The general increase in raw materials costs (an unavoidable result of this Standard), and the costs of monitoring, respiratory protection, medical surveillance and record keeping all mitigate against the likelihood that the bulk of this segment of the industry would be able to survive economically.^{46/}

^{45/} Although many individual companies presented evidence that their fabrication operations had exposure levels below 1 ppm, the most comprehensive presentation on occupational exposure to VCM in this segment of the industry was presented in a block by five witnesses testifying for SPI, Messrs. Molinini, Beebe, Smith, Becker and Weaver. JA 4102 through 4176. In short, these reports, covering in excess of 70 plants where actual monitoring for VCM had been conducted in the very short time available, demonstrated that less than 10 workers had exposures for any time period above 1 ppm. Nonetheless, in each case listed, average exposure was less than 1 ppm, i.e., less than 1 ppm for an 8 hour TWA.

^{46/} For example, on the one issue of the non-availability of PVC resin at a reasonable cost, the evidence is clear that PVC belting (used, e.g., as conveyor belting in coal mines), slush molded boots and a variety of other footwear, medical (con't)

Also germane is the fact that no confirmed cases of carcinogenicity related to VCM have been found in PVC fabrication and processing operations.

Thus, the Secretary's decision to extend the scope of the Standard to polyvinyl chloride fabricators and processors is not founded on substantial evidence in the Record to show that it is economically feasible for this segment of the industry to achieve compliance with the Standard or that fabrication and processing operations are in any way similar to or have exposures of the same nature as existing vinyl chloride and polyvinyl chloride manufacturing operations, nor that any hazard exists in this segment of the industry. In short, there is no evidence of a need to regulate these areas.

The Standard's scope also extends to cover the storage, handling and transportation of PVC.^{47/} There is no evidence in the Record whatsoever to demonstrate that any hazard exists in ship, truck or rail transportation, warehousing or other handling of PVC. Despite the fact that

^{46/}(con't) equipment, especially surgical tubing and blood bags, and joint sealing compound for airport runways, bridges and highways, among other items could no longer be produced and, since replacement materials are non-existent or scarce, these industries would, at the very least, suffer economic disaster if not close down completely. JA 387, 515, 1351, 1642 and 2075.

^{47/} 29 C.F.R. §1910.93q(a)(2) and (e); 39 Fed. Reg. 35896.

no hazard has been shown or even alleged, the Standard as written puts a direct and undue burden on the secondary industries that service the VCM and PVC manufacturers by providing transportation and storage.

In other regulations promulgated by OSHA, materials containing small amounts of a carcinogenic material are exempted from the application of regulations governing exposure to them. Specifically, in the regulations governing exposure to the "14 carcinogens" the regulations do not apply to trans-shipment of those materials in sealed containers

nor do the regulations apply to liquid or solid mixtures containing less than from 1.0 to 0.1% of the carcinogenic substances.^{48/}

In viewing the suggestions by industry that VCM should be regulated in a manner comparable to the 14 carcinogens, the Secretary responded that the cases are not comparable. It is true that the cases of VCM and the "14 carcinogens" are not precisely comparable; the 14 carcinogens are materials that range from between 100 to 1000 times the carcinogenic potential of VCM.^{49/}

In this area, too, it is clear that the Secretary's decision was not based on substantial evidence in the Record;

^{48/} 29 C.F.R. §§1910.93c through 1910.93p.

^{49/} JA 3975-76.

his views are also at variance with experience gained in establishing the Standards for the "14 carcinogens." This all bespeaks the type of arbitrary and capricious decision making which characterizes the instant case. More important, these failings, like those previously discussed demonstrate the necessity and propriety for remanding this matter to the Department of Labor with clear instructions to it to base its VCM Standard on facts supported by substantial evidence, feasibility and relevant precedents.

IV

THE VINYL CHLORIDE STANDARD IS SO
VAGUE AND INDEFINITE THAT IT VIOLATES THE
CONSTITUTIONAL RIGHT TO DUE PROCESS AND FAILS
TO COMPLY WITH THE REQUIREMENTS OF THE ACT

As noted above, the Vinyl Chloride Standard is couched in the alternative: either an employer must reduce vinyl chloride exposure to the permissible exposure limits of 1 ppm and 5 ppm or, in the alternative, the employer must provide respiratory protective equipment and at the same time reduce exposures to the greatest extent feasible as soon as feasible. This part of the Standard, 29 C.F.R. §1910.93q(f)(2), provides:

"Wherever feasible engineering and work practice controls which can be instituted immediately are not sufficient to reduce exposures to at or below the permissible exposure limit, they shall nonetheless be used to reduce exposures to the lowest practicable level, and shall be supplemented by respiratory protection in accordance with paragraph (g) of this section. A program shall be established and implemented to reduce exposures to at or below the permissible exposure limit, or to the greatest extent feasible, solely by means of engineering and work practice controls, as soon as feasible" (emphasis added).

Since the permissible limit is unattainable, as a practical matter the only standard applicable to employers for the foreseeable future is the second alternative, to provide respiratory equipment and to reduce exposures to the lowest "practicable" level by "feasible" engineering and work practice controls. In direct contrast with the specific

and objective criteria established for compliance with the permissible limit, this portion of the Standard is so vague and indefinite as to be violative of the Due Process Clause of the Fifth Amendment to the United States Constitution and the specific requirement contained in §6(b)(5) of the Act, 29 U.S.C. §655(b)(5), that, whenever practicable, health and safety standards "...shall be expressed in terms of objective criteria...." The ambiguity inherent in this part of the Standard provides absolutely no guidance to employers and will necessarily result in confusion and uncertainty, not only with respect to the "feasible" methods which are required to comply with the Standard, but also with respect to the exposure levels sought to be achieved, for such levels are expressed only in terms of what may be the "lowest practicable" levels attainable.

The due process guarantees of the Fifth and Fourteenth Amendments void all governmental attempts to regulate conduct where, as here, substantial penalties may be imposed for failure to comply with regulations, OSH Act §17; 29 U.S.C. §666, which are so vague and indefinite as to leave the regulated parties uncertain as to the conduct prohibited, or which leave judicial and administrative officers free to determine, without any definitely fixed standards, what is prohibited and what is not. Graccio v. Pennsylvania, 382 U.S. 399 (1966); Kraus & Bros. v. United States, 327 U.S.

614 (1946); United States v. L. Cohen Grocery Co., 255 U.S. 71 (1921). The objectivity requirement of §6(b)(5) of this Act, 29 U.S.C. §655(b)(5), was obviously designed to insure that any standards promulgated pursuant to the Act observe the well established principle that any statute or administrative regulation

"...which either forbids or requires the doing of an act in terms so vague that men of common intelligence must necessarily guess at its meaning and differ as to its application, violates the first essential of due process of law." Connally v. General Const. Co., 269 U.S. 385, 391 (1926); Kraus & Bros. v. United States, supra.

In addition, if arbitrary and discriminatory enforcement of administrative regulations is to be prevented, regulations must provide explicit standards for those who apply them. A vague regulation impermissibly delegates basic policy matters to those responsible for its enforcement for resolution on an ad hoc and subjective basis with the attendant dangers of arbitrary and discriminatory application. Graccio v. Pennsylvania, supra.^{50/} By insisting on objective criteria whenever practicable, §6(b)(5) of the Act has the dual purpose

^{50/} Where First Amendment freedoms are not involved, a due process challenge of this kind is generally made by a convicted party and is usually limited to a review "on its face." See, Ashton v. Kentucky, 384 U.S. 195 (1966); United States v. National Dairy Products Corp., 372 U.S. 29 (1963); Stromberg v. California, 283 U.S. 359 (1931). The "Standard for Exposure to Vinyl Chloride" is presented to this Court for review under the authority of §6(f) of the Occupational Safety and Health Act, 29 U.S.C. §655(f). Therefore, the distinction between (con't

of insuring that the Secretary observes the dictates of fundamental due process as well as requiring that the Secretary "...take reasonable steps to enable the [Courts] to carry out the task [of meaningful judicial review] that Congress has imposed upon them." Associated Industries, supra, at 354.

Despite these clear and well-established Constitutional and statutory requirements, the Secretary has promulgated a Standard which fails to meet the basic clarity and specificity requirements in two vital areas. First of all, the Standard contains absolutely no discernible criteria for an employer to use in determining what engineering controls and work practices required to be implemented are "feasible." Determination of "feasibility" is clearly a difficult matter, involving as it does a balancing of many complex factors, including, among others, worker safety, technological capability and economic cost. I.U.D. v. Hodgson, supra, at 477-78. Yet, this Standard does not in any way inform employers, employees, OSHA or the Courts how this balance is to be struck in any particular case.

Secondly, the Standard also fails to set forth in definite terms the objective sought to be achieved through

50/ (con't) First Amendment and non-First Amendment cases is not relevant here. The Standard is here for review "on its face" pursuant to statutory authority to challenge "the validity of such standard."

the implementation of whatever "engineering controls and work practices may be feasible." The exposure levels for which employers must strive in the absence of the ability to achieve the permissible limits are totally indeterminate and undefined, and an employer will never know that he has failed to reduce exposure levels in his plants to the "lowest practicable" levels until he is cited for violating the Standard. To confirm the lack of required objectivity in this portion of the Standard, the Court need only look to the Secretary's statement that "...any estimate as to the lowest feasible level attainable must necessarily involve subjective judgment."^{51/}

Thus, the Standard is deficient in that it does not provide any ascertainable and objective criteria by which an employer can determine if the engineering controls and work practices he has instituted are sufficient to comply with the Standard, or that the resulting exposure levels are the "lowest practicable" levels required by the Standard. In short, unless an employer has reduced vinyl chloride exposure to the admittedly unattainable "permissible exposure limit" (1 ppm-5 ppm), he can have no assurance that he is not in violation of the Standard, no matter how strenuous

^{51/} 39 Fed. Reg. 35892.

his efforts to comply. The Secretary has admitted this, since he also concedes in the preamble to the Standard that it is not clear "...to what extent exposures can be feasibly reduced." ^{52/}

Under similar circumstances, the Court of Appeals for the Sixth Circuit, in Chrysler Corp. v. Dep't of Transportation, 472 F.2d 659 (6th Cir. 1972), struck down a motor

^{52/} 39 Fed. Reg. 35892. Other examples of the type of ambiguity that is bound to lead to enforcement difficulty are the provisions in §§1910.93q(e) and (g) of the Standard. It is difficult to believe that the Secretary intended the results these sections could bring into play.

Under §1910.93q(e)(2) "authorized personnel" are those persons with a duty requiring them to enter a "regulated area," i.e. one where VCM concentrations exceed the permissible limit, and specific authorization from their employers to do so. In addition, entry is limited for purposes of life rescue when the atmospheric concentration of VCM is unknown or in excess of 36,000 ppm. 29 C.F.R. §1910.93q(g)(5).

These two requirements, individually and in combination, effectively prevent emergency repairs.

In the instance where an emergency, such as a broken valve or ruptured pipe, occurs, anyone who is not specifically authorized to enter or who has no duty to conduct emergency repairs is prohibited from entering and cannot take quick action to repair the damage.

In the same instance, if the concentration of VCM is unknown or in excess of 36,000 ppm, authorized personnel may enter the area only for purposes of life rescue. They can help persons to escape but cannot take any preventive measures whatsoever. Again, quick action cannot be taken to repair the damage or otherwise reduce the hazard of fire or explosion. Thus, a greater hazard than currently exists is created by the Standard's regulated area access and entry restrictions. This is patently ridiculous.

vehicle safety standard involving airbags as an alternative to passive restraints in automobiles. The manufacturers there challenged the airbag standard because the test procedure and the test device specified for measuring compliance with the standard were not sufficiently objective. The specification to be met there was set forth in objective terms, but there were several technical ambiguities as to the permissible flexibility in certain portions of the test procedure. In vacating the standard the Court of Appeals rejected the use of subjective judgment, the very basis on which the

Secretary proposes to proceed here, saying, at 675:

"In the absence of objectively defined performance requirements and test procedures, a manufacturer has no assurance that his own test results will be duplicated in tests conducted by the Agency. Accordingly, such objective criteria are absolutely necessary so that 'the question of whether there is compliance with the standard can be answered by objective measurement and without recourse to any subjective determination'" (emphasis added).

A similar deficiency in a stationery source standard governing emissions from cement plants promulgated by the Environmental Protection Agency was sufficient to require reconsideration of the standard by the Agency in Portland Cement Association v. Ruckelshaus, 486 F.2d 375, 400-01 (D.C. Cir. 1973). The standard in question provided that particulate matter discharged from a kiln must not exceed "...10 percent opacity, except that where the presence of uncombined

water is the only reason for failure to meet the requirements for this subparagraph...." The Court refused to approve the standard because inspectors were unable to determine with any reasonable degree of accuracy whether any particular level of emissions met the standard.

Not only will the inherent vagueness of the Vinyl Chloride Standard leave employers in the dark as to what is expected of them, but the Standard invites arbitrary and discriminatory enforcement on an ad hoc basis by the OSHA officers charged with determining compliance. As presently framed, the Standard will require those charged with responsibility for its enforcement to exercise extraordinary efforts to avoid contradictory enforcement since these officials have no more guidance on the application of the Standard than do employers. In effect, the Secretary has impermissibly delegated his responsibility to promulgate standards to the discretion of individual compliance officers scattered throughout the United States. ✓

Finally, the Secretary has acknowledged that any estimate as to the lowest exposure levels attainable "...must necessarily involve subjective judgment."^{53/} The failure of the Standard to specify any criteria upon which such judgments might be based will prevent any meaningful judicial

^{53/} 39 Fed. Reg. 35892.

review of citations for violations of the Standard. The Standard must, therefore, be set aside and the case remanded to the Secretary to take such actions as may be necessary to enable employers and reviewing courts alike "...to carry out the task that Congress has imposed on them." Associated Industries, supra, at 354.

V

THE VINYL CHLORIDE LABELING REQUIREMENTS FAIL
TO COMPLY WITH THE REQUIREMENTS OF THE
OCCUPATIONAL SAFETY AND HEALTH ACT AND
ARE, THEREFORE, UNLAWFUL

- A. THE SECRETARY EXCEEDED HIS STATUTORY AUTHORITY IN THAT
THE LABELING WHICH WOULD BE REQUIRED BY THE STANDARD
DOES NOT ADEQUATELY INFORM EMPLOYEES AS REQUIRED BY THE
OCCUPATIONAL SAFETY AND HEALTH ACT.

The Occupational Safety and Health Act of 1970 indicates that any standard promulgated by the Secretary of Labor in the area of employee safety and health shall prescribe the use of labels, as necessary, to insure that employees are apprised of all hazards to which they are exposed, all relevant symptoms, the appropriate emergency treatment, and the proper conditions and precautions of safe use or exposure. OSH Act §6(b)(7); 29 U.S.C. §655(b)(7). The purpose of safety and health labeling is, therefore, instructive and requires responsible, affirmative information about the actual danger and the methods of treatment and prevention. Here, the Secretary would require only an identification of the chemical, "vinyl chloride," and inclusion of the words "Cancer-Suspect Agent."^{54/} This type of labeling will not practically inform those working with VCM of the danger, the methods of work hazard prevention, or the treatment for any possible hazard that may arise. The

scare word "cancer" passes no constructive information to the worker, tells an employee nothing about what the real danger is, how he may be injured, or what he should do to prevent injury.

On the purpose of labeling, the Senate Committee Report stated:

"Basically, the worker needs to have adequate advance knowledge of hazards in order to protect himself from damaging exposures. He needs proper protective equipment and the information necessary to treat emergencies if they arise. He should not be economically coerced into a hazardous job. Since inadvertent exposure to unknown products or processes often causes severe and immediate reactions, the exposed worker must know what type of exposure he has suffered in order to use proper treatment. The worker especially needs this information in cases of toxic substances which have delayed or latent ill effects."

Sen. Rep. No. 91-1282, 91st Cong., 2d Sess. (1951); 3 U.S. Code Cong. & Admin. News (1970).

The Occupational Safety and Health Act specifically instructs the Secretary to consider "...experience gained from this and other health and safety laws." OSH Act §6(b)(5); 29 U.S.C. §655(b)(5).

A review of the standards dealing with another carcinogen, asbestos fibers, indicates that the Secretary has not followed his own previous experience. In dealing with asbestos fibers, he did properly inform the employees of the actual danger and how to prevent health hazards. The

labeling specifications for asbestos fibers are:

"Caution--Contains Asbestos Fibers
Avoid Creating Dust
Breathing Asbestos Dust May Cause
Serious Bodily Harm." ^{55/}

These asbestos labeling standards were challenged by the unions which proposed including the words "danger" or "warning" and making reference to particular health problems, such as cancer or asbestosis. The government argued, and the Court agreed, the language selected by the Secretary was proper. I.U.D. v. Hodgson, supra, at 484.

It is on this basis that the plastics industry proposed alternative labeling in this case. ^{56/} The following is a comparison of the labeling prescribed in the Standard and the industry proposal:

(1) Entrances to regulated areas:

Industry Proposal

VINYL CHLORIDE VAPOR HAZARD
USE ASSIGNED PROTECTIVE EQUIPMENT WHEN ALARM
SIGNAL IS ACTIVATED
WHEN SIGNAL IS ACTIVATED, DO NOT REMAIN IN ALARM AREA
UNLESS YOUR WORK REQUIRES IT
BREATHING EXCESSIVE QUANTITIES OF VINYL CHLORIDE VAPOR
MAY BE HAZARDOUS TO YOUR HEALTH
AUTHORIZED PERSONNEL ONLY

^{55/} 29 C.F.R. §1910.93a(g)(2).

^{56/} While it is true that the "14 carcinogens" (29 C.F.R. 1910.3c through 1910.93p) are required to employ cancer-type labeling for other than mixtures containing only low levels of the substances, this case is more analogous to that of asbestos, the "14 carcinogens" being substances that are from 100 to 1000 times more carcinogenic than vinyl chloride. JA 3975-76.

Secretary's Standard

CANCER-SUSPECT AGENT AREA
AUTHORIZED PERSONNEL ONLY

(2) Areas containing hazardous operations:

Industry Proposal

VINYL CHLORIDE VAPOR IN THIS AREA
PROTECTIVE CLOTHING AND
RESPIRATORS REQUIRED
AUTHORIZED PERSONNEL ONLY

Secretary's Standard

CANCER-SUSPECT AGENT IN THIS AREA
PROTECTIVE EQUIPMENT REQUIRED
AUTHORIZED PERSONNEL ONLY

(3) Containers of PVC resin waste from reactors:

Industry Proposal

VINYL CHLORIDE CONTAMINATED MATERIAL
MAY BE HAZARDOUS TO YOUR HEALTH
DISPOSE OF OR DECONTAMINATE USING ADEQUATE
VENTILATION OR PROTECTIVE EQUIPMENT

Secretary's Standard

Contaminated with
VINYL CHLORIDE CANCER-SUSPECT AGENT

(4) Containers of PVC:

Industry Proposal

POLYVINYL CHLORIDE
CAUTION
CONTAINS VINYL CHLORIDE
AVOID BREATHING VAPOR OR DUST
CLOSED CONTAINERS OF POLYVINYL CHLORIDE MAY CONTAIN
VAPOR LEVELS OF VINYL CHLORIDE WHICH MAY
BE HAZARDOUS TO YOUR HEALTH
OPEN ONLY IN WELL-VENTILATED AREAS OR WEAR RESPIRATORY
PROTECTION

Secretary's Standard

POLYVINYL CHLORIDE (or Trade Name)

CONTAINS

VINYL CHLORIDE

VINYL CHLORIDE IS A CANCER-SUSPECT AGENT

(5) Containers of Vinyl Chloride:

Industry Proposal

VINYL CHLORIDE

DANGER

EXTREMELY FLAMMABLE GAS UNDER PRESSURE

AVOID CONTACT WITH LIQUID OR VAPOR UNLESS FULLY

PROTECTED BY AUTHORIZED EQUIPMENT

IN THE EVENT OF ACUTE EXPOSURE SEEK MEDICAL

ASSISTANCE IMMEDIATELY

Secretary's Standard

VINYL CHLORIDE

EXTREMELY FLAMMABLE GAS UNDER PRESSURE

CANCER-SUSPECT AGENT

A comparison of the type of labeling the industry recommended with the simplistic "scare headline" type prescribed in the Secretary's Standard must inevitably lead to the conclusion that the former might aid an employee to deal with a hazard, while the latter would be of no help at all. It is, therefore, respectfully submitted that the labeling provisions in the Standard do not comport with either the spirit or express provisions in the enabling Statute, will accomplish only great mischief without concomitant benefit to the work force, and should, therefore, be declared invalid and unlawful.

B. THE SECRETARY EXCEEDED HIS STATUTORY AUTHORITY AND ILLEGALLY USURPED THAT OF ANOTHER FEDERAL DEPARTMENT BY ADOPTING THE LABELING PROVISIONS IN THE STANDARD.

In addition to the basic defect discussed above, in promulgating the labeling requirements for vinyl chloride, the Secretary also failed to observe another important statutory limitation on the scope of his authority. Under the terms of the Act, the Secretary is explicitly precluded from exercising power to govern working conditions of employees over which other federal agencies exercise statutory authority to prescribe or enforce standards or regulations affecting occupational safety and health. OSH Act §4(b)(1); 29 U.S.C. §653(b)(1).

In its report, the Senate Labor Committee highlighted this statutory limitation as follows:

"...[I]t does not modify other Federal laws prescribing safety and health standards. The bill does not authorize the Secretary of Labor to assert authority under this bill over particular working conditions regarding which another federal agency exercises statutory authority to prescribe or enforce standards affecting occupational safety and health."

Sen. Rep. No. 91-1282, 91st Cong. 2d Sess. (1970); 3 U.S. Code Cong. & Admin. News 5199 (1970).

The labeling requirements in the Standard under review here would control labeling on all containers of vinyl

chloride^{57/} and, thereby, apply to the transportation of VCM in interstate commerce. The Secretary would require either the label:

Vinyl Chloride
Extremely Flammable Gas Under Pressure
Cancer-Suspect Agent

or a label in accordance with Department of Transportation (DOT) Regulations, 49 C.F.R. §173.400, et seq., and the addition of the words "Cancer-Suspect Agent."^{58/}

The Secretary has clearly extended his Standard to the area of transportation labeling for VCM while recognizing that the field is occupied by DOT. In fact, DOT has been expressly authorized by Congress to formulate regulations for the safe transportation of hazardous materials, DOT Act; 49 U.S.C. §1655(e)(4), and has extensive regulations for the labeling of VCM in transportation at 49 C.F.R. §§172.5, 173.402(3), .404 and .407. If the Secretary of Labor is permitted to superimpose his Department's labeling preferences or desires wherever and whenever he chooses, this could adversely affect and disrupt the entire regulatory scheme of DOT in the standards it sets for hazardous substances in transportation.

^{57/} 29 C.F.R. §1910.93q(a)(3) and (1)(5); 39 Fed. Reg. 35896-98.

^{58/} 29 C.F.R. §1910.93q(1)(5); 39 Fed. Reg. 35898.

In exceeding his statutory authority to act only in non-regulated areas, and in infringing on already existing labeling for VCM, the Secretary has promulgated an unlawful Standard in 29 C.F.R. §1910.93q(1). Thus, the labeling requirements for VCM in containers must be held unlawful along with the other provisions heretofore discussed.

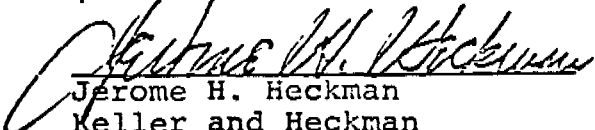
VI

CONCLUSION

In consideration of the Secretary of Labor's failure to promulgate a Standard based on the substantial evidence present in the Record, his failure to promulgate a technologically or economically feasible Standard, his failure to provide a sufficiently clear statement of proscribed conduct to inform those regulated of what they must do to comply, and his failure to provide for proper labeling, it is hereby urged that 29 C.F.R. §1910.93g be declared inoperative as unlawful and invalid, and that this matter be remanded to the Department of Labor for further proceedings leading to action which would comport with the statutory requirements.

Respectfully submitted,


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APPENDIX

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*/ Pertinent portions of the Federal Register and 29 C.F.R. §1910.93q, et seq. cited in this brief are contained in the Joint Appendix.

Amend. 5

CONSTITUTION

AMENDMENT V—CAPITAL CRIMES; DOUBLE JEOPARDY; SELF-INCRIMINATION; DUE PROCESS; JUST COMPENSATION FOR PROPERTY

[No person shall be held to answer for a capital, or otherwise infamous crime, unless on a presentment or indictment of a Grand Jury, except in cases arising in the land or naval forces, or in the Militia, when in actual service in time of War or public danger; nor shall any person be subject for the same offence to be twice put in jeopardy of life or limb; nor shall be compelled in any criminal case to be a witness against himself, nor be deprived of life, liberty, or property, without due process of law; nor shall private property be taken for public use, without just compensation.]

29 § 653

§ 653. Geographic applicability; judicial enforcement; applicability to existing standards; report to Congress on duplication and coordination of Federal laws; workmen's compensation law or common law or statutory rights, duties, or liabilities of employers and employees unaffected.

(b) (1) Nothing in this chapter shall apply to working conditions of employees with respect to which other Federal agencies, and State agencies acting under section 2021 of Title 42, exercise statutory authority to prescribe or enforce standards or regulations affecting occupational safety or health.

§ 654. Duties of employers and employees

(a) Each employer—

(1) shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees;

29 § 655

§ 655. Standards—Promulgation by Secretary of national consensus standards and established Federal standards; time for promulgation; conflicting standards

Procedure for promulgation, modification, or revocation of standards

(b) The Secretary may by rule promulgate, modify, or revoke any occupational safety or health standard in the following manner:

(5) The Secretary, in promulgating standards dealing with toxic materials or harmful physical agents under this subsection, shall set the standard which most adequately assures, to the extent feasible, on the basis of the best available evidence, that no employee will suffer material impairment of health or functional capacity even if such employee has regular exposure to the hazard dealt with by such standard for the period of his working life. Development of standards under this subsection shall be based upon research, demonstrations, experiments, and such other information as may be appropriate. In addition to the attainment of the highest degree of health and safety protection for the employee, other considerations shall be the latest available scientific data in the field, the feasibility of the standards, and experience gained under this and other health and safety laws. Whenever practicable, the standard promulgated shall be expressed in terms of objective criteria and of the performance desired.

29 §.655

(7) Any standard promulgated under this subsection shall prescribe the use of labels or other appropriate forms of warning as are necessary to insure that employees are apprised of all hazards to which they are exposed, relevant symptoms and appropriate emergency treatment, and proper conditions and precautions of safe use or exposure. Where appropriate, such standard shall also prescribe suitable protective equipment and control or technological procedures to be used in connection with such hazards and shall provide for monitoring or measuring employee exposure at such locations and intervals, and in such manner as may be necessary for the protection of employees. In addition, where appropriate, any such standard shall prescribe the type and frequency of medical examinations or other tests which shall be made available, by the employer or at his cost, to employees exposed to such hazards in order to most effectively determine whether the health of such employees is adversely affected by such exposure. In the event such medical examinations are in the nature of research, as determined by the Secretary of Health, Education, and Welfare, such examinations may be furnished at the expense of the Secretary of Health, Education, and Welfare. The results of such examinations or tests shall be furnished only to the Secretary or the Secretary of Health, Education, and Welfare, and, at the request of the employee, to his physician. The Secretary, in consultation with the Secretary of Health, Education, and Welfare, may by rule promulgated pursuant to section 553 of Title 5, make appropriate modifications in the foregoing requirements relating to the use of labels or other forms of warning, monitoring or measuring, and medical examinations, as may be warranted by experience, information, or medical or technological developments acquired subsequent to the promulgation of the relevant standard.]

Judicial review

(f) Any person who may be adversely affected by a standard issued under this section may at any time prior to the sixtieth day after such standard is promulgated file a petition challenging the validity of such standard with the United States court of appeals for the circuit wherein such person resides or has his principal place of business, for a judicial review of such standard. A copy of the petition shall be forthwith transmitted by the clerk of the court to the Secretary. The filing of such petition shall not, unless otherwise ordered by the court, operate as a stay of the standard. The determinations of the Secretary shall be conclusive if supported by substantial evidence in the record considered as a whole.]

29 § 666

[§ 666. Civil and criminal penalties]

(a) Any employer who willfully or repeatedly violates the requirements of section 654 of this title, any standard, rule, or order promulgated pursuant to section 655 of this title, or regulations prescribed pursuant to this chapter, may be assessed a civil penalty of not more than \$10,000 for each violation.

(b) Any employer who has received a citation for a serious violation of the requirements of section 654 of this title, of any standard, rule, or order promulgated pursuant to section 655 of this title, or of any regulations prescribed pursuant to this chapter, shall be assessed a civil penalty of up to \$1,000 for each such violation.

(c) Any employer who has received a citation for a violation of the requirements of section 654 of this title, of any standard, rule, or order promulgated pursuant to section 655 of this title, or of regulations prescribed pursuant to this chapter, and such violation is specifically determined not to be of a serious nature, may be assessed a civil penalty of up to \$1,000 for each such violation.

(d) Any employer who fails to correct a violation for which a citation has been issued under section 658(a) of this title within the period permitted for its correction (which period shall not begin to run until the date of the final order of the Commission in the case of any review proceeding under section 659 of this title initiated by the employer in good faith and not solely for delay or avoidance of penalties), may be assessed a civil penalty of not more than \$1,000 for each day during which such failure or violation continues.

(e) Any employer who willfully violates any standard, rule, or order promulgated pursuant to section 655 of this title, or of any regulations prescribed pursuant to this chapter, and that violation caused death to any employee, shall, upon conviction, be punished by a fine of not more than \$10,000 or by imprisonment for not more than six months, or by both; except that if the conviction is for a violation committed after a first conviction of such person, punishment shall be by a fine of not more than \$20,000 or by imprisonment for not more than one year, or by both.

(f) Any person who gives advance notice of any inspection to be conducted under this chapter, without authority from the Secretary or his designees, shall, upon conviction, be punished by a fine of not more than \$1,000 or by imprisonment for not more than six months, or by both.

(g) Whoever knowingly makes any false statement, representation, or certification in any application, record, report, plan, or other document filed or required to be maintained pursuant to this chapter shall, upon conviction, be punished by a fine of not more than \$10,000, or by imprisonment for not more than six months, or by both.

(h) Any employer who violates any of the posting requirements, as prescribed under the provisions of this chapter, shall be assessed a civil penalty of up to \$1,000 for each violation.

(i) The Commission shall have authority to assess all civil penalties provided in this section, giving due consideration to the appropriateness of the penalty with respect to the size of the business of the employer being charged, the gravity of the violation, the good faith of the employer, and the history of previous violations.

(j) For purposes of this section, a serious violation shall be deemed to exist in a place of employment if there is a substantial probability that death or serious physical harm could result from a condition which exists, or from one or more practices, means, methods, operations, or processes which have been adopted or are in use, in such place of employment unless the employer did not, and could not with the exercise of reasonable diligence, know of the presence of the violation.

(k) Civil penalties owed under this chapter shall be paid to the Secretary for deposit into the Treasury of the United States and shall accrue to the United States and may be recovered in a civil action in the name of the United States brought in the United States district court for the district where the violation is alleged to have occurred or where the employer has its principal office.

49 § 1655

§ 1655. Transfer of functions—Powers and duties of the Secretary of Commerce and other offices and officers of the Department of Commerce relating to highways, ground transportation generally, aircraft, pilotage, and traffic and highway safety generally

Interstate Commerce Commission: functions, powers, and duties, relative to safety appliances and equipment on railroad engines and cars, protection of employees and travelers, hours of service, medals for heroism, explosives and other dangerous articles, standard time zones and daylight saving time; safety of operation and equipment

(c) There are hereby transferred to and vested in the Secretary all functions, powers, and duties of the Interstate Commerce Commission, and of the Chairman, members, officers, and offices thereof, under

(1) the following provisions of law relating generally to explosives and other dangerous articles: Sections 831-835 of Title 18

any 8-hour work shift of a 40-hour work week, shall not exceed the 8-hour time weighted average given for that material in the table.

(b) Table G-2:

(1) *8-hour time weighted averages.* An employee's exposure to any material listed in table G-2, in any 8-hour work shift of a 40-hour work week, shall not exceed the 8-hour time weighted average limit given for that material in the table.

(2) *Acceptable ceiling concentrations.* An employee's exposure to a material listed in table G-2 shall not exceed at any time during an 8-hour shift the acceptable ceiling concentration limit given for the material in the table, except for a time period, and up to a concentration not exceeding the maximum duration and concentration allowed in the column under "acceptable maximum peak above the acceptable ceiling concentration for an 8-hour shift".

(3) *Example.* During an 8-hour work shift, an employee may be exposed to a concentration of Benzene above 25 p.p.m. (but never above 50 p.p.m.) only for a maximum period of 10 minutes. Such exposure must be compensated by exposures to concentrations less than 10 p.p.m. so that the cumulative exposure for the entire 8-hour work shift does not exceed a weighted average of 10 p.p.m.

(c) Table G-3: An employee's exposure to any material listed in table G-3, in any 8-hour work shift of a 40-hour work week, shall not exceed the 8-hour time weighted average limit given for that material in the table.

(d) Computation formulae:

(1) (i) The cumulative exposure for an 8-hour work shift shall be computed as follows:

$$E = \frac{C_1 T_1 + C_2 T_2 + \dots + C_n T_n}{8}$$

8

where:

E is the equivalent exposure for the working shift.

C is the concentration during any period of time *T* where the concentration remains constant.

T is the duration in hours of the exposure at the concentration *C*.

The value of *E* shall not exceed the 8-hour time weighted average limit in table G-1, G-2, or G-3 for the material involved.

(ii) To illustrate the formula prescribed in subdivision (i) of this subparagraph, note that isoamyl acetate has an 8-hour time weighted average limit of

Subpart G—Occupational Health and Environmental Control

§ 1910.93 Air contaminants.

An employee's exposure to any material listed in table G-1, G-2, or G-3 of this section shall be limited in accordance with the requirements of the following paragraphs of this section.

(a) Table G-1:

(1) *Materials with names preceded by "C"—Ceiling Values.* An employee's exposure to any material in table G-1, the name of which is preceded by a "C" (e.g., C Boron trifluoride), shall at no time exceed the ceiling value given for that material in the table.

(2) *Other materials—8-hour time weighted averages.* An employee's exposure to any material in table G-1, the name of which is not preceded by "C", in

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100 p.p.m. (table G-1). Assume that an employee is subject to the following exposure:

Two hours exposure at 150 p.p.m.
Two hours exposure at 75 p.p.m.
Four hours exposure at 50 p.p.m.

Substituting this information in the formula, we have

$$\frac{2 \times 150 + 2 \times 75 + 4 \times 50}{8} = 81.25 \text{ p.p.m.}$$

Since 81.25 p.p.m. is less than 100 p.p.m., the 8-hour time weighted average limit, the exposure is acceptable.

(2) (i) In case of a mixture of air contaminants an employer shall compute the equivalent exposure as follows:

$$E_m = \frac{C_1}{L_1} + \frac{C_2}{L_2} + \dots + \frac{C_n}{L_n}$$

Where:

E_m is the equivalent exposure for the mixture.

C is the concentration of a particular contaminant.

L is the exposure limit for that contaminant, from table G-1, G-2, or G-3.

The value of E_m shall not exceed unity (1).

(ii) To illustrate the formula prescribed in subdivision (i) of this subparagraph, consider the following exposures:

Material	Actual concentration of 8-hour exposure	8-hour time weighted average exposure limit
Acetone (Table G-1).....	500 p.p.m.	1,000 p.p.m.
2-Butanone (Table G-1)....	45 p.p.m.	200 p.p.m.
Toluene (Table G-2).....	40 p.p.m.	200 p.p.m.

Substituting in the formula, we have:

$$E_m = \frac{500}{1,000} + \frac{45}{200} + \frac{40}{200}$$

$$E_m = 0.500 + 0.225 + 0.200$$

$$E_m = 0.925$$

Since E_m is less than unity (1), the exposure combination is within acceptable limits.

(e) To achieve compliance with paragraph (a) through (d) of this section, administrative or engineering controls must first be determined and implemented whenever feasible. When such controls are not feasible to achieve full compliance, protective equipment or any other protective measures shall be used to keep the exposure of employees to air contaminants within the limits pre-

scribed in this section. Any equipment and/or technical measures used for this purpose must be approved for each particular use by a competent industrial hygienist or other technically qualified person. Whenever respirators are used, their use shall comply with § 1910.134.

TABLE G-1

Substance	p.p.m.*	mg./lit.†
Acetaldehyde.....	200	360
Acetic acid.....	10	25
Acetic anhydride.....	5	20
Acetone.....	1,000	2,400
Acrylonitrile.....	40	70
Acetylene dichloride, see 1, 2-Dichloroethylene.....		
Arcylene tetrabromide.....	1	14
Acrolein.....	0.1	0.25
Acrylamide—Skin.....		0.3
Acrylonitrile—Skin.....	20	45
Albin—Skin.....		0.25
Allyl alcohol—Skin.....	2	5
Allyl chloride.....	1	3
*C Allyl glycidyl ether (AGE).....	10	45
Allyl propyl disulfide.....	2	12
2-Aminoethanol, see Ethanol-amine.....		
2-Aminopyridine.....	0.5	2
*Ammonia.....	50	35
Ammonium sulfamate (Am-mate).....		15
n-Amyl acetate.....	100	525
sec-Amyl acetate.....	125	650
Aniline—Skin.....	5	19
Anthracene 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000		

See footnotes at end of table.

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TABLE G-1—Continued

Substance	p.p.m.*	mg./lit.*
Chlorinated camphene—Skin		0.5
Chlorinated diphenyl oxide		0.5
Chlorine	1	3
Chlorine dioxide	0.1	0.3
Chlorine trifluoride	0.1	0.4
Chloroacetaldehyde	1	3
Chloroacetophenone (phenacylchloride)	0.05	0.3
Chlorobenzene (monochloro- benzene)	75	350
Chlorobenzylphenyl malononitrile (OCBM)	0.05	0.4
Chlorobromomethane	200	1,050
2-Chloro-1,3-butadiene, see Chloroprene		
Chlorodiphenyl (42 percent chlorine)—Skin		1
Chlorodiphenyl (54 percent chlorine)—Skin		0.5
1-Chloro-2,3-epoxypropane, see Epichlorohydrin		
2-Chloroethanol, see Ethylene chlorohydrin		
Chloroethylene, see Vinyl chloride		
C Chloroform (trichloro- methane)	50	240
1-Chloro-1-nitropropane	20	100
Chloroform	0.1	0.7
Chloroprene (2-chloro-1,3- butadiene)—Skin	25	90
Chromium, sol. chromic, chromous salts as Cr		0.5
Metal and insol. salts		1
Coal tar pitch, volatile (ben- zene soluble fraction) anthra- cene, BaP, phenanthrene, acridine, chrysene, pyrene		0.2
Cobalt, metal fume and dust		0.1
Copper fume		0.1
Dusts and Mists		1
Cotton dust (raw)		1
Crocidin herbicide		15
Cresol (all isomers)—Skin	5	22
Crotonaldehyde	2	8
Cumene—Skin	50	245
Cyanide (as CN)—Skin		5
Cyclohexane	300	1,050
Cyclohexanol	50	200
Cyclohexanone	50	240
Cyclohexene	300	1,015
Cyclopentadiene	75	200
2,4-D		10
DDT—Skin		1
DDVP, see Dichlorvos		
Decaborane—Skin	0.05	0.3
Demeton D—Skin		0.1
Diacetone alcohol (4-hydroxy- 4-methyl-2-pentanone)	50	240
1,2-Diaminoethane, see Ethylene diamine		
Diazomethane	0.2	0.4
Diborane	0.1	0.1
Dibutylphthalate		5
C o-Dichlorobenzene	50	300
p-Dichlorobenzene	75	470
Dichlorodifluoromethane	1,000	4,950
1,3-Dichloro-5,5-dimethyl hydantoin		0.2
1,1-Dichloroethane	100	470
1,2-Dichloroethylene	50	70
C Dichloromethyl ether—Skin	15	90
Dichloromethane, see Methylene chloride		
Dichloromonofluoroethane	1,000	4,200
C 1,1,1-Trichloro-1-nitroethane	10	60
1,2-Dichloropropane, see Propylene dichloride		
Dichlorotetrafluoroethane	1,000	7,000
Dichlorvos (DDVP)—Skin		1

See footnotes at end of table.

TABLE G-1—Continued

Substance	p.p.m.*	mg./lit.*
Dieldrin—Skin		0.25
Diethylamine	25	75
Diethylamino ethanol—Skin	10	50
Diethyl ether, see Ethyl ether		
Difluorodibromomethane	100	500
C Diethyl ether (DGE)	0.5	2.8
Dihydroxybenzene, see Hydroquinone		
Disobutyl ketone	50	250
Diisopropylamine—Skin	5	20
Dimethoxymethane, see Methylal		
Dimethyl acetamide—Skin	10	35
Dimethylamine	10	18
Dimethylaminobenzene, see Nylone		
Dimethylamine (N-dimethyl- aniline)—Skin	5	25
Dimethylbenzene, see Xylene		
Dimethyl 1,2-dibromo-2,2-di- chloroethyl phosphate, (Dibrom)		3
Dimethylformamide—Skin	10	30
2,6-Dimethylheptanone, see Diisobutyl ketone		
1,1-Dimethylhydrazine—Skin	0.5	1
Dimethylphthalate		5
Dimethyl sulfate—Skin	1	5
Dinitrobenzene (all isomers)— Skin		0.2
Dinitro-o-cresol—Skin		0.2
Dinitrophenol—Skin		1.5
Dioxane (Diethylene dioxide)— Skin	100	300
Diphenyl	0.2	1
Diphenylmethane diisocyanate (see Methylene bisphenyl isocyanate (MDI))		
Dipropylene glycol methyl ether—Skin	100	600
Di-sec-octyl phthalate (Di-2- ethylhexylphthalate)		5
Endrin—Skin		0.1
Epichlorohydrin—Skin	5	19
EPN—Skin		0.5
1,2-Epoxypropane, see Propylene oxide		
2,3-Epoxy-1-propanol, see Glycidol		
Ethanthiol, see Ethylmer- captan		
Ethanolamine	3	6
2-Ethoxyethanol—Skin	200	740
2-Ethoxyethylacetate (Cello- solve acetate)—Skin	100	540
Ethyl acetate	400	1,400
Ethyl acrylate—Skin	25	100
Ethyl alcohol (ethanol)	1,000	1,000
Ethylamine	10	18
Ethyl sec-amyl ketone (5- methyl-3-heptanone)	25	130
Ethyl benzene	100	435
Ethyl bromide	200	820
Ethyl butyl ketone (3- heptanone)	50	270
Ethyl chloride	1,000	2,000
Ethyl ether	400	1,200
Ethyl formate	100	370
C Ethyl mercaptan	10	25
Ethyl sulfate	100	850
Ethylene chlorohydrin—Skin	5	19
Ethylene dibromine	10	25
Ethylene dibromide, see 1,2- Dibromethane		
Ethylene dichloride, see 1,2- Dichloroethane		
C Ethylene glycol dibutyl and sec-Nitroethyl—Skin	0.2	1.9
Ethylene glycol monomethyl ether acetate, see Methyl cellosolve acetate		

See footnotes at end of table.

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TABLE G-1—Continued

Substance	p.p.m.*	mg./M ³ *
Ethyleneimine—Skin	0.5	1
Ethylene oxide	50	90
Ethylene chloride, see 1,1-Dichloroethane		
N-Ethylmorpholine—Skin	20	41
Farham		15
Ferrocenadium dust		1
Fluoride (as F)		2.5
Fluorine	0.1	0.2
Fluorotrichloromethane	1,000	5,600
Formic acid	5	9
Furfural—Skin	5	20
Furfuryl alcohol	50	200
Glycidol (2,3-Epoxy-1-propanol)	50	150
Glycol dimethyl ether, see 2-Ethoxyethanol		
Guthion ®, see Azinphos-methyl		
Haftalim		0.5
Heptachlor—Skin		0.5
Heptane (n-heptane)	500	2,000
Hexachloroethane—Skin	1	10
Hexachloronaphthalene—Skin		0.2
Hexane (n-hexane)	500	1,800
2-Hexanone	100	410
Hexone (Methyl isobutyl ketone)	100	410
see Hexyl acetate	50	300
Hydrazine—Skin	1	1.3
Hydrogen bromide	3	10
C Hydrogen chloride	5	7
Hydrogen cyanide—Skin	10	11
Hydrogen peroxide (90%)	1	1.4
Hydrogen selenide	0.05	0.2
Hydroquinone		2
C Isoline	0.1	1
Iron oxide fume		10
Isamyl acetate	100	525
Isamyl alcohol	100	350
Isobutyl acetate	150	700
Isobutyl alcohol	100	300
Isophorone	25	140
Isopropyl acetate	250	950
Isopropyl alcohol	400	1600
Isopropylamine	5	12
Isopropylether	500	2,100
Isopropyl glycidyl ether (IGE)	50	240
Ketene	0.5	0.9
Lead arsenate		0.15
Lindane—Skin		0.5
Lithium hydride		0.025
L.P.G. (liquefied petroleum gas)	1,000	1,800
Magnesium oxide fume		15
Malathion—Skin		15
Male anhydride	0.25	1
C Manganese		5
Mesityl oxide	25	100
Methanethiol, see Methyl mercaptan		
Methoxychlor		15
2-Methoxyethanol, see Methyl cellosolve		
Methyl acetate	200	610
Methyl acetylene (propyne)	1,000	1,650
Methyl acetylene-propadiene mixture (MAPP)	1,000	1,800
Methyl acrylate—Skin	10	35
Methylal (dimethoxymethane)	1,000	3,100
Methyl alcohol (methanol)	200	250
Methylamine	10	12
Methyl amyl alcohol, see Methyl isobutyl carbamate		
Methyl (n amyl) ketone (2-Hexanone)	100	465
C Methyl bromide—Skin	20	80
Methyl butyl ketone, see 2-Hexanone		
Methyl cellosolve—Skin	25	50
Methyl cellosolve acetate—Skin	25	120

See footnotes at end of table.

TABLE G-1—Continued

Substance	p.p.m.*	mg./M ³ *
Methyl chloroform	350	1,500
Methylcyclohexane	500	2,000
Methylcyclohexanol	100	470
o-Methylcyclohexanone—Skin	100	460
Methyl ethyl ketone (MEK), see 2-Butanone		
Methyl formate	100	250
Methyl iodide—Skin	5	23
Methyl isobutyl carbamate—Skin	25	100
Methyl isobutyl ketone, see Hexone		
Methyl isocyanate—Skin	0.02	0.05
C Methyl mercaptan	10	20
Methyl methacrylate	100	410
Methyl propyl ketone, see 2-Pentanone		
C Methyl styrene	100	430
C Methylene bisphenyl isocyanate (MDI)	0.02	0.2
Molybdenum		5
Soluble compounds		15
Insoluble compounds		9
Monomethyl aniline—Skin	2	9
C Monomethyl hydrazine—Skin	0.2	0.35
Morpholine—Skin	20	70
Naphtha (coal tar)	100	400
Naphthalene	10	50
Nickel carbonyl	0.001	0.007
Nickel, metal and soluble emps., as Ni		1
Nicotine—Skin		0.5
Nitric acid	2	5
Nitric oxide	25	30
p-Nitroaniline—Skin	1	5
Nitrobenzene—Skin	1	5
p-Nitrochlorobenzene—Skin		1
Nitroethane	100	310
Nitrogen dioxide	5	9
Nitrogen trifluoride	10	25
Nitroglycerin—Skin	0.2	7
Nitromethane	100	250
1-Nitropropane	25	90
2-Nitropropane	25	90
Nitrotoluene—Skin	5	30
Nitrotrichloromethane, see Chloroform		
Octachloronaphthalene—Skin		0.1
*Octane	500	2,350
*Oil mist, mineral		0.5
Osmium tetroxide		0.002
Oxalic acid		1
Oxygen difluoride	0.05	0.1
Ozone	0.1	0.2
Paraquat—Skin		0.5
Parathion—Skin		0.1
Pentaborane	0.005	0.01
Pentachloronaphthalene—Skin		0.5
Pentachlorophenol—Skin		0.5
*Pentane	1,000	2,950
2-Pentanone	200	700
Perchloromethyl mercaptan	0.1	0.4
Perchloryl fluoride	3	13.5
Petroleum distillates (naphtha)	500	2,000
Phenol—Skin	5	19
p-Phenylene diamine—Skin		0.1
Phenyl ether (vapor)	1	7
Phenyl ether-bisphenyl mixture (vapor)	1	7
Phenylethylene, see Styrene		
Phenyl glycidyl ether (PGE)	10	60
Phenylhydrazine—Skin	5	23
Phosdrin (Mevinphos ®)—Skin		0.1
Phosgene (carbonyl chloride)	0.1	0.4
Phosphine	0.3	0.4
Phosphoric acid		1
Phosphorus (yellow)		0.1
Phosphorus pentachloride		1
Phosphorus pentasulfide		1
Phosphorus trichloride	0.5	3

See footnotes at end of table.

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TABLE G-1—Continued

Substance	p.p.m.*	mg./M ³ b
Phthalic anhydride.....	2	12
Picric acid—Skin.....		0.1
Pivalic (2,4-dimethyl-3-oxopentanoic) acid.....		0.1
Platinum (Soluble Salts) as Pt.....		0.002
Propargyl alcohol—Skin.....	1	
Propane.....	1,000	1,800
n-Propyl acetate.....	200	840
Propyl alcohol.....	200	500
n-Propyl nitrate.....	25	110
Propylene dichloride.....	75	350
Propylene sulfide—Skin.....	2	5
Propylene oxide.....	100	240
Propyne, see Methylacetylene.....		
Pyrethrum.....	5	5
Pyridine.....	5	15
Quinone.....	0.1	0.4
RDX—Skin.....		1.5
Rhodium, Metal fume and dusts, as Rh.....		0.1
Soluble salts.....		0.001
Ronnel.....	10	10
Rotenone (commercial).....	5	5
Selenium compounds (as Se).....		0.2
Selenium hexafluoride.....	0.05	0.4
Silver, metal and soluble compounds.....		0.01
Sodium fluoracetate (1050)—Skin.....		0.05
Sodium hydroxide.....		2
Stibine.....	0.1	0.5
*Standard solvent.....	500	2,050
strychnine.....		0.15
Sulfur dioxide.....	5	12
Sulfur hexafluoride.....	1,000	6,000
Sulfuric acid.....		1
Sulfur monochloride.....	1	6
Sulfur pentafluoride.....	0.025	0.25
Sulfuryl fluoride.....	5	20
Systox, see Demeton @.....		
2,4,5T.....		10
Tantalum.....		5
TEPP—Skin.....		0.2
Tellurium.....		0.1
Tellurium hexafluoride.....	0.02	0.2
TEPP—Skin.....		0.05
C Terphenyls.....	1	9
1,1,1,2-Tetrachloro-2,2-difluoroethane.....	500	4,170
1,1,2,2-Tetrachloro-1,2-difluoroethane.....	500	4,170
1,1,2,2-Tetrachloroethane—Skin.....	5	35
Tetrachloroethylene, see Perchloroethylene.....		
Tetrachloromethane, see Carbon tetrachloride.....		
Tetrachloronaphthalene—Skin.....		2
Tetraethyl lead (as Pb)—Skin.....		0.075
Tetrahydrofuran.....	200	590
Tetraethyl lead (as Pb)—Skin.....		0.07
Tetramethyl succinonitrile—Skin.....	0.5	3

TABLE G-1—Continued

Substance	p.p.m.*	mg./M ³ b
Tetrautromethane.....	1	8
Tetryl (2,4,6-trinitrophenylmethyl)nitramine—Skin.....		1.5
Thallium (soluble compounds)—Skin as Tl.....		0.1
Thiourea.....		5
Tin (inorganic compds, except oxides).....		2
Tin (organic compds).....		0.1
C Toluene-2,4-dithiocyanate.....	0.02	0.14
o-Toluidine—Skin.....	5	22
Toxaphene, see Chlorinated camphene.....		
Tributyl phosphate.....		5
1,1,1-Trichloroethane see Methyl chloroform.....		
1,1,2-Trichloroethane—Skin.....	10	45
Titaniumdichloride.....		15
Trichloromethane, see Chloroform.....		
Trichloronaphthalene—Skin.....		5
1,2,3-Trichloropropane.....	50	300
1,1,2-Trichloro-1,2,2-trifluoroethane.....	1,000	7,600
Triethylamine.....	25	100
Trifluoromonomethane.....	1,000	6,100
2,4,6-Trinitrophenol, see Picric acid.....		
2,4,6-Trinitrophenylmethyl-nitramine, see Tetryl.....		
Trinitrotoluene—Skin.....		1.5
Triorthocresyl phosphate.....		0.1
Triphenyl phosphate.....		3
Turpentine.....	100	560
Uranium (soluble compounds).....		0.05
Uranium (insoluble compounds).....		0.25
C Vanadium:		
V ₂ O ₅ dust.....		0.5
V ₂ O ₅ fume.....		0.1
Vinyl benzene, see Styrene.....		
*C Vinyl chloride.....	500	1,300
Vinylcyanide, see Acrylonitrile.....		
Vinyl toluene.....	100	480
Wafarin.....		0.1
Xylene (xytol).....	100	435
Xylidine—Skin.....	5	25
Yttrium.....		1
Zinc chloride fume.....		1
Zinc oxide fume.....		5
Zirconium compounds (as Zr).....		5

*1970 Addition.

• Parts of vapor or gas per million parts of contaminated air by volume at 25° C. and 760 mm. Hg pressure.

• Approximate milligrams of particulate per cubic meter of air.

(No footnote "c" is used to avoid confusion with ceiling value notations.)

• An atmospheric concentration of not more than 0.02 p.p.m., or personal protection may be necessary to avoid headache.

• As sampled by method that does not collect vapor.

• For control of general room air, biologic monitoring, is essential for personnel control.

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Material	8-hour time weighted average	Acceptable ceiling concentration	Acceptable maximum peak above the acceptable ceiling concentration for an 8-hour shift.	
			Concentration	Maximum duration
Benzene (Z37.4-1969).....	10 p.p.m.	25 p.p.m.	50 p.p.m.	10 minutes.
Beryllium and beryllium compounds (Z37.20-1970).....	2 µg./M ³	5 µg./M ³	25 µg./M ³	30 minutes.
Cadmium fume (Z37.5-1970).....	0.1 mg./M ³	3 mg./M ³		
Cadmium dust (Z37.5-1970).....	0.2 mg./M ³	0.6 mg./M ³		
Carbon disulfide (Z37.3-1968).....	20 p.p.m.	30 p.p.m.	100 p.p.m.	Do.
Carbon tetrachloride (Z37.17-1967).....	10 p.p.m.	25 p.p.m.	200 p.p.m.	5 minutes in any 4 hours.
Ethylene dibromide (Z37.31-1970).....	20 p.p.m.	30 p.p.m.	60 p.p.m.	6 minutes.
Ethylene dichloride (Z37.21-1969).....	50 p.p.m.	100 p.p.m.	200 p.p.m.	5 minutes in any 3 hours.
Formaldehyde (Z37.16-1967).....	3 p.p.m.	5 p.p.m.	10 p.p.m.	30 minutes.
Hydrogen fluoride (Z37.25-1969).....	do.			
Fluoride as dust (Z37.28-1969).....	2.5 mg./M ³			
Lead and its inorganic compounds (Z37.11-1969).....	0.2 mg./M ³			
Methyl chloride (Z37.18-1969).....	100 p.p.m.	200 p.p.m.	300 p.p.m.	5 minutes in any 3 hours.
Methylene Chloride (Z37.3-1969).....	500 p.p.m.	1,000 p.p.m.	2,000 p.p.m.	5 minutes in any 2 hours.
Organo (alkyl) mercury (Z37.30-1969).....	0.01 mg./M ³	0.04 mg./M ³		
Styrene (Z37.15-1969).....	100 p.p.m.	200 p.p.m.	600 p.p.m.	5 minutes in any 3 hours.
Trichloroethylene (Z37.19-1967).....	do.	do.	300 p.p.m.	5 minutes in any 2 hours.
Tetrachloroethylene (Z37.22-1967).....	do.	do.	do.	5 minutes in any 3 hours.
Toluene (Z37.12-1967).....	200 p.p.m.	300 p.p.m.	500 p.p.m.	10 minutes.
Hydrogen sulfide (Z37.2-1966).....	20 p.p.m.	50 p.p.m.		10 minutes once only. If no other measurable exposure occurs.
Mercury (Z37.8-1971).....	1 mg./1031 ft ³			
Chronic acid and chromates (Z37.7-1971).....	do.			

air, as determined by the method prescribed in paragraph (e) of this section.

(c) *Methods of compliance*—(1) *Engineering methods*. (i) *Engineering controls*. Engineering controls, such as, but not limited to, isolation, enclosure, exhaust ventilation, and dust collection, shall be used to meet the exposure limits prescribed in paragraph (b) of this section.

(ii) *Local exhaust ventilation*. (a) Local exhaust ventilation and dust collection systems shall be designed, constructed, installed, and maintained in accordance with the American National Standard Fundamentals Governing the Design and Operation of Local Exhaust Systems, ANSI Z9.2-1971, which is incorporated by reference herein.

(b) See § 1910.6 concerning the availability of ANSI Z9.2-1971, and the maintenance of a historic file in connection therewith. The address of the American National Standards Institute is given in § 1910.100.

(iii) *Particular tools*. All hand-operated and power-operated tools which may produce or release asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section, such as, but not limited to, saws, scorers, abrasive wheels, and drills, shall be provided with local exhaust ventilation systems in accordance with subdivision (ii) of this subparagraph.

(2) *Work practices*—(i) *Wet methods*. Insofar as practicable, asbestos shall be handled, mixed, applied, removed, cut, scored, or otherwise worked in a wet state sufficient to prevent the emission of airborne fibers in excess of the exposure limits prescribed in paragraph (b) of this section, unless the usefulness of the product would be diminished thereby.

(ii) *Particular products and operations*. No asbestos cement, mortar, coating, grout, plaster, or similar material containing asbestos shall be removed from bags, cartons, or other containers in which they are shipped, without being either wetted, or enclosed, or ventilated so as to prevent effectively the release of airborne asbestos fibers in excess of the limits prescribed in paragraph (b) of this section.

(iii) *Spraying, demolition, or removal*. Employees engaged in the spraying of asbestos, the removal, or demolition of pipes, structures, or equipment covered or insulated with asbestos, and in the removal or demolition of asbestos insulation or coverings shall be provided with respiratory equipment in accordance with paragraph (d) (2) (iii) of this section and with special clothing in accordance with paragraph (d) (3) of this section.

(d) *Personal protective equipment*—(1) Compliance with the exposure limits prescribed by paragraph (b) of this section may not be achieved by the use of respirators or shift rotation of employees, except:

(i) During the time period necessary to install the engineering controls and to institute the work practices required by paragraph (c) of this section;

§ 1910.23a Asbestos.

(a) *Definitions*. For the purpose of this section, (1) "Asbestos" includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite.

(2) "Asbestos fibers" means asbestos fibers longer than 5 micrometers.

(b) *Permissible exposure to airborne concentrations of asbestos fibers*—(1) *Standard effective July 7, 1972*. The 8-hour time-weighted average airborne concentrations of asbestos fibers to which any employee may be exposed shall not exceed five fibers, longer than 5 micrometers, per cubic centimeter of air, as determined by the method prescribed in paragraph (e) of this section.

(2) *Standard effective July 1, 1976*. The 8-hour time-weighted average airborne concentrations of asbestos fibers to which any employee may be exposed shall not exceed two fibers, longer than 5 micrometers, per cubic centimeter of air, as determined by the method prescribed in paragraph (e) of this section.

(3) *Ceiling concentration*. No employee shall be exposed at any time to airborne concentrations of asbestos fibers in excess of 10 fibers, longer than 5 micrometers, per cubic centimeter of

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(ii) In work situations in which the methods prescribed in paragraph (c) of this section are either technically not feasible or feasible to an extent insufficient to reduce the airborne concentrations of asbestos fibers below the limits prescribed by paragraph (b) of this section; or

(iii) In emergencies.

(iv) Where both respirators and personnel rotation are allowed by subdivisions (i), (ii), or (iii) of this subparagraph, and both are practicable, personnel rotation shall be preferred and used.

(2) Where a respirator is permitted by subparagraph (1) of this paragraph, it shall be selected from among those approved by the Bureau of Mines, Department of the Interior, or the National Institute for Occupational Safety and Health, Department of Health, Education, and Welfare, under the provisions of 30 CFR Part 11 (37 F.R. 6244, Mar. 25, 1972), and shall be used in accordance with subdivisions (i), (ii), (iii), and (iv) of this subparagraph.

(i) *Air purifying respirators.* A reusable or single use air purifying respirator, or a respirator described in subdivision (ii) or (iii) of this subparagraph, shall be used to reduce the concentrations of airborne asbestos fibers in the respirator below the exposure limits prescribed in paragraph (b) of this section, when the ceiling or the 8-hour time-weighted average airborne concentrations of asbestos fibers are reasonably expected to exceed no more than 10 times those limits.

(ii) *Powered air purifying respirators.* A full facepiece powered air purifying respirator, or a powered air purifying respirator, or a respirator described in subdivision (iii) of this subparagraph, shall be used to reduce the concentrations of airborne asbestos fibers in the respirator below the exposure limits prescribed in paragraph (b) of this section, when the ceiling or the 8-hour time-weighted average concentrations of asbestos fibers are reasonably expected to exceed 10 times, but not 100 times, those limits.

(iii) *Type "C" supplied-air respirators, continuous flow or pressure-demand class.* A type "C" continuous flow or pressure-demand, supplied-air respirator shall be used to reduce the concentrations of airborne asbestos fibers in the respirator below the exposure limits prescribed in paragraph (b) of this section, when the ceiling or the 8-hour time-weighted average airborne concentrations of asbestos fibers are reasonably expected to exceed 100 times those limits.

(iv) *Establishment of a respirator program.* (a) The employer shall establish a respirator program in accordance with the requirements of the American National Standards Practices for Respiratory Protection, ANSI Z88.2-1969, which is incorporated by reference herein.

(b) See § 1910.6 concerning the availability of ANSI Z88.2-1969 and the maintenance of an historic file in connection therewith. The address of the American National Standards Institute is given in § 1910.100.

(c) No employee shall be assigned to tasks requiring the use of respirators if, based upon his most recent examination, an examining physician determines that the employee will be unable to function normally wearing a respirator, or that the safety or health of the employee or other employees will be impaired by his use of a respirator. Such employee shall be rotated to another job or given the opportunity to transfer to a different position whose duties he is able to perform with the same employer, in the same geographical area and with the same seniority, status, and rate of pay he had just prior to such transfer, if such a different position is available.

(3) *Special clothing:* The employer shall provide, and require the use of, special clothing, such as coveralls or similar whole body clothing, head coverings, gloves, and foot coverings for any employee exposed to airborne concentrations of asbestos fibers, which exceed the ceiling level prescribed in paragraph (b) of this section.

(4) *Change rooms:* (i) At any fixed place of employment exposed to airborne concentrations of asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section, the employer shall provide change rooms for employees working regularly at the place.

(ii) *Clothes lockers:* The employer shall provide two separate lockers or containers for each employee, so separated or isolated as to prevent contamination of the employee's street clothes from his work clothes.

(iii) *Laundering:* (a) Laundering of asbestos contaminated clothing shall be done so as to prevent the release of airborne asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section.

(b) Any employer who gives asbestos-contaminated clothing to another person for laundering shall inform such person of the requirement in (a) of this subdivision to effectively prevent the release of airborne asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section.

(c) Contaminated clothing shall be transported in sealed impermeable bags, or other closed, impermeable containers, and labeled in accordance with paragraph (g) of this section.

(e) *Method of measurement.* All determinations of airborne concentrations of asbestos fibers shall be made by the membrane filter method at 400-450 X (magnification) (4 millimeter objective) with phase contrast illumination.

(f) *Monitoring—(1) Initial determinations.* Within 6 months of the publication of this section, every employer shall cause every place of employment where asbestos fibers are released to be monitored in such a way as to determine whether every employee's exposure to asbestos fibers is below the limits prescribed in paragraph (b) of this section. If the limits are exceeded, the employer shall immediately undertake a compliance program in accordance with paragraph (c) of this section.

(2) *Personal monitoring—(1) Samples* shall be collected from within the breathing zone of the employees, on membrane filters of 0.8 micrometer porosity mounted in an open-face filter holder. Samples shall be taken for the determination of the 8-hour time-weighted average airborne concentrations and of the ceiling concentrations of asbestos fibers.

(ii) *Sampling frequency and patterns.* After the initial determinations required by subparagraph (1) of this paragraph samples shall be of such frequency and pattern as to represent with reasonable accuracy the levels of exposure of employees. In no case shall the sampling be done at intervals greater than 6 months for employees whose exposure to asbestos may reasonably be foreseen to exceed the limits prescribed by paragraph (b) of this section.

(3) *Environmental monitoring—(1) samples* shall be collected from areas of a work environment which are representative of the airborne concentrations of asbestos fibers which may reach the breathing zone of employees. Samples shall be collected on a membrane filter of 0.8 micrometer porosity mounted in an open-face filter holder. Samples shall be taken for the determination of the 8-hour time-weighted average airborne concentrations and of the ceiling concentrations of asbestos fibers.

(ii) *Sampling frequency and patterns.* After the initial determinations required by subparagraph (1) of this paragraph, samples shall be of such frequency and pattern as to represent with reasonable accuracy the levels of exposure of the employees. In no case shall sampling be at intervals greater than 6 months for employees whose exposures to asbestos may reasonably be foreseen to exceed the exposure limits prescribed in paragraph (b) of this section.

(4) *Employee observation of monitoring.* Affected employees, or their representatives, shall be given a reasonable opportunity to observe any monitoring required by this paragraph and shall have access to the records thereof.

(g) *Caution signs and labels.* (1) *Caution signs.* (i) *Posting.* Caution signs shall be provided and displayed at each location where airborne concentrations of asbestos fibers may be in excess of the exposure limits prescribed in paragraph (b) of this section. Signs shall be posted at such a distance from such a location so that an employee may read the signs and take necessary protective steps before entering the area marked by the signs. Signs shall be posted at all approaches to areas containing excessive concentrations of airborne asbestos fibers.

(ii) *Sign specifications.* The warning signs required by subdivision (i) of this subparagraph shall conform to the requirements of 20" x 14" vertical format signs specified in § 1910.145(d)(4), and to this subdivision. The signs shall display the following legend in the lower panel, with letter sizes and styles of a visibility at least equal to that specified in this subdivision.

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Legend	Notation
Asbestos	1" Sans Serif, Gothic or Block.
Dust Hazard	3/4" Sans Serif, Gothic or Block.
Avoid Breathing Dust	1/4" Gothic.
Wear Assigned Protective Equipment	1/4" Gothic.
Do Not Remain In Area Unless Your Work Requires It	1/4" Gothic.
Breathing Asbestos Dust May Be Hazardous To Your Health	14 point Gothic.

Spacing between lines shall be at least equal to the height of the upper of any two lines.

(2) **Caution labels**—(1) **Labeling.** Caution labels shall be affixed to all raw materials, mixtures, scrap, waste, debris, and other products containing asbestos fibers, or to their containers, except that no label is required where asbestos fibers have been modified by a bonding agent, coating, binder, or other material so that during any reasonably foreseeable use, handling, storage, disposal, processing, or transportation, no airborne concentrations of asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section will be released.

(1) **Label specifications.** The caution labels required by subdivision (1) of this subparagraph shall be printed in letters of sufficient size and contrast as to be readily visible and legible. The label shall state:

Caution
Contains Asbestos Fibers
Avoid Creating Dust

Breathing Asbestos Dust May Cause
Serious Bodily Harm

(h) **Housekeeping**—(1) **Cleaning.** All external surfaces in any place of employment shall be maintained free of accumulations of asbestos fibers if, with their dispersion, there would be an excessive concentration.

(2) **Waste disposal.** Asbestos waste, scrap, debris, bags, containers, equipment, and asbestos-contaminated clothing, consigned for disposal, which may produce in any reasonably foreseeable use, handling, storage, processing, disposal, or transportation airborne concentrations of asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section shall be collected and disposed of in sealed impermeable bags, or other closed, impermeable containers.

(1) **Recordkeeping**—(1) **Exposure records.** Every employer shall maintain records of any personal or environmental monitoring required by this section. Records shall be maintained for a period of at least 3 years and shall be made available upon request to the Assistant Secretary of Labor for Occupational Safety and Health, the Director of the National Institute for Occupational Safety and Health, and to authorized representatives of either.

(2) **Employee access.** Every employee and former employee shall have reasonable access to any record required to be maintained by subparagraph (1) of this

paragraph, which indicates the employee's own exposure to asbestos fibers.

(3) **Employee notification.** Any employee found to have been exposed at any time to airborne concentrations of asbestos fibers in excess of the limits prescribed in paragraph (b) of this section shall be notified in writing of the exposure as soon as practicable but not later than 5 days of the finding. The employee shall also be timely notified of the corrective action being taken.

(j) **Medical examinations**—(1) **General.** The employer shall provide or make available at his cost, medical examinations relative to exposure to asbestos required by this paragraph.

(2) **Preplacement.** The employer shall provide or make available to each of his employees, within 30 calendar days following his first employment in an occupation exposed to airborne concentrations of asbestos fibers, a comprehensive medical examination, which shall include, as a minimum, a chest roentgenogram (posterior-anterior 14 x 17 inches), a history to elicit symptomatology of respiratory disease, and pulmonary function tests to include forced vital capacity (FVC) and forced expiratory volume at 1 second (FEV_{1.0}).

(3) **Annual examinations.** On or before January 31, 1973, and at least annually thereafter, every employer shall provide, or make available, comprehensive medical examinations to each of his employees engaged in occupations exposed to airborne concentrations of asbestos fibers. Such annual examination shall include, as a minimum, a chest roentgenogram (posterior-anterior 14 x 17 inches), a history to elicit symptomatology of respiratory disease, and pulmonary function tests to include forced vital capacity (FVC) and forced expiratory volume at 1 second (FEV_{1.0}).

(4) **Termination of employment.** The employer shall provide, or make available, within 30 calendar days before or after the termination of employment of any employee engaged in an occupation exposed to airborne concentrations of asbestos fibers, a comprehensive medical examination which shall include, as a minimum, a chest roentgenogram (posterior-anterior 14 x 17 inches), a history to elicit symptomatology of respiratory disease, and pulmonary function tests to include forced vital capacity (FVC) and forced expiratory volume at 1 second (FEV_{1.0}).

(5) **Recent examinations.** No medical examination is required of any employee, if adequate records show that the employee has been examined in accordance with this paragraph within the past 1-year period.

(6) **Medical records**—(1) **Maintenance.** Employers of employees examined pursuant to this paragraph shall cause to be maintained complete and accurate records of all such medical examinations. Records shall be retained by employers for at least 20 years.

(1) **Access.** The contents of the records of the medical examinations required by this paragraph shall be made available, for inspection and copying,

to the Assistant Secretary of Labor for Occupational Safety and Health, the Director of NIOSH, to authorized physicians and medical consultants of either of them, and, upon the request of an employee or former employee, to his physician. Any physician who conducts a medical examination required by this paragraph shall furnish to the employer of the examined employee all the information specifically required by this paragraph, and any other medical information related to occupational exposure to asbestos fibers.

§ 1910.93b Coal tar pitch volatiles; interpretation of term.

As used in § 1910.93 (Table G-1), coal tar pitch volatiles include the fused polycyclic hydrocarbons which volatilize from the distillation residues of coal, petroleum, wood, and other organic matter.

(Sec. 8(g), 84 Stat. 1600, 29 U.S.C. 657) [37 FR 24749, Nov. 21, 1972]

§ 1910.93c 4-Nitrobiphenyl.

(a) **Scope and application.** (1) This section applies to any area in which 4-Nitrobiphenyl, Chemical Abstracts Service Registry Number 92933 is manufactured, processed, repackaged, released, handled, or stored, but shall not apply to trans-shipment in sealed containers, except for the labeling requirements under paragraphs (e) (2), (3), and (4) of this section.

(2) This section shall not apply to solid or liquid mixtures containing less than 0.1 percent by weight or volume of 4-Nitrobiphenyl.

(b) **Definitions.** For the purposes of this section: (1) "Absolute filter" is one capable of retaining 99.97 percent of a mono disperse aerosol of 0.3 µm particles.

(2) "Authorized employee" means an employee whose duties require him to be in the regulated area and who has been specifically assigned by the employer.

(3) "Clean change room" means a room where employees put on clean clothing and/or protective equipment in an environment free of 4-Nitrobiphenyl. The clean change room shall be contiguous to and have an entry from a shower room, when the shower room facilities are otherwise required in this section.

(4) "Closed system" means an operation involving 4-Nitrobiphenyl where containment prevents the release of 4-Nitrobiphenyl into regulated areas, non-regulated areas, or the external environment.

(5) "Decontamination" means the inactivation of 4-Nitrobiphenyl or its safe disposal.

(6) "Director" means the Director, National Institute for Occupational Safety and Health, or any person directed by him or the Secretary of Health, Education, and Welfare to act for the Director.

(7) "Disposal" means the safe removal of 4-Nitrobiphenyl from the work environment.

(8) "Emergency" means an unforeseen circumstance or set of circumstances resulting in the release of 4-Nitrobiphenyl

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which may result in exposure to or contact with 4-Nitrobiphenyl.

(9) "External environment" means any environment external to regulated and nonregulated areas.

(10) "Isolated system" means a fully enclosed structure other than the vessel of containment of 4-Nitrobiphenyl, which is impervious to the passage of 4-Nitrobiphenyl, and which would prevent the entry of 4-Nitrobiphenyl into regulated areas, nonregulated areas, or the external environment, should leakage or spillage from the vessel of containment occur.

(11) "Laboratory type hood" is a device enclosed on three sides and the top and bottom, designed and maintained so as to draw air inward at an average linear face velocity of 150 feet per minute with a minimum of 125 feet per minute; designed, constructed, and maintained in such a way that an operation involving 4-Nitrobiphenyl within the hood does not require the insertion of any portion of any employee's body other than his hands and arms.

(12) "Nonregulated area" means any area under the control of the employer where entry and exit is neither restricted nor controlled.

(13) "Open-vessel system" means an operation involving 4-Nitrobiphenyl in an open vessel, which is not in an isolated system, a laboratory type hood, nor in any other system affording equivalent protection against the entry of 4-Nitrobiphenyl into regulated areas, nonregulated areas, or the external environment.

(14) "Protective clothing" means clothing designed to protect an employee against contact with or exposure to 4-Nitrobiphenyl.

(15) "Regulated area" means an area where entry and exit is restricted and controlled.

(c) "Requirements for areas containing 4-Nitrobiphenyl." A regulated area shall be established by an employer where 4-Nitrobiphenyl is manufactured, processed, used, repackaged, released, handled or stored. All such areas shall be controlled in accordance with the requirements for the following category or categories describing the operation involved: (1) *Isolated systems.* Employees working with 4-Nitrobiphenyl within an isolated system such as a "glove box" shall wash their hands and arms upon completion of the assigned task and before engaging in other activities not associated with the isolated system.

(2) *Closed system operation.* Within regulated areas where 4-Nitrobiphenyl is stored in sealed containers, or contained in a closed system, including piping systems, with any sample ports or openings closed while 4-Nitrobiphenyl is contained within: (i) Access shall be restricted to authorized employees only;

(ii) Employees shall be required to wash hands, forearms, face and neck upon each exit from the regulated areas, close to the point of exit and before engaging in other activities.

(3) *Open vessel system operations.* Open-vessel system operations as defined

in paragraph (b) (13) of this section are prohibited.

(4) *Transfer from a closed system, charging or discharging point operations, or otherwise opening a closed system.* In operations involving "laboratory type hoods," or in locations where 4-Nitrobiphenyl is contained in an otherwise "closed system," but is transferred, charged, or discharged into other normally closed containers, the provisions of this subparagraph shall apply. (i) Access shall be restricted to authorized employees only;

(ii) Each operation shall be provided with continuous local exhaust ventilation so that air movement is always from ordinary work areas to the operation. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated. Clean makeup air shall be introduced in sufficient volume to maintain the correct operation of the local exhaust system.

(iii) Employees shall be provided with, and required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), shoe covers and gloves prior to entering the regulated area.

(iv) Employees engaged in 4-Nitrobiphenyl handling operations shall be provided with and required to wear and use a half-face, filter-type respirator for dusts, mists, and fumes, in accordance with § 1910.134. A respirator affording higher levels of protection may be substituted.

(v) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified, as required under paragraphs (e) (2), (3), and (4) of this section.

(vi) Employees shall be required to wash hands, forearms, face and neck on each exit from the regulated area, close to the point of exit, and before engaging in other activities.

(vii) Employees shall be required to shower after the last exit of the day.

(viii) Drinking fountains are prohibited in the regulated area.

(5) *Maintenance and decontamination activities.* In cleanup of leaks or spills, maintenance or repair operations on contaminated systems or equipment, or any operations involving work in an area where direct contact with 4-Nitrobiphenyl could result, each authorized employee entering that area shall: (i) Be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood in accordance with § 1910.134.

(ii) Be decontaminated before removing the protective garments and hood;

(iii) Be required to shower upon removing the protective garments and hood.

(6) *Laboratory activities.* The requirements of this subparagraph shall apply to research and quality control activities involving the use of 4-Nitrobiphenyl. (i) Mechanical pipetting aids shall be used for all pipetting procedures.

(ii) Experiments, procedures and equipment which could produce aerosols shall be confined to laboratory-type hoods or glove boxes.

(iii) Surfaces on which 4-Nitrobiphenyl is handled shall be protected from contamination.

(iv) Contaminated wastes and animal carcasses shall be collected in impervious containers which are closed and decontaminated prior to removal from the work area. Such wastes and carcasses shall be incinerated in such a manner that no carcinogenic products are released.

(v) All other forms of 4-Nitrobiphenyl shall be inactivated prior to disposal.

(vi) Laboratory vacuum systems shall be protected with high-efficiency scrubbers or with disposable absolute filters.

(vii) Employees engaged in animal support activities shall be (a) provided with, and required to wear, a complete protective clothing change, clean each day, including coveralls or pants and shirt, foot covers, head covers, gloves, and appropriate respiratory protective equipment or devices; and

(b) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place, use, clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified as required under paragraphs (e) (2), (3), and (4) of this section.

(c) Required to wash hands, forearm face and neck upon each exit from the regulated area close to the point of exit and before engaging in other activities, and

(d) Required to shower after the last exit of the day.

(viii) Employees, other than those engaged only in animal support activities, each day shall be (a) provided with and required to wear a clean change of appropriate laboratory clothing, such as solid front gown, surgical scrub suit, fully buttoned laboratory coat.

(b) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified as required under paragraphs (e) (2), (3), and (4) of this section.

(c) Required to wash hands, forearm face and neck upon each exit from regulated area close to the point of exit and before engaging in other activities.

(ix) Air pressure in laboratory and animal rooms where 4-Nitrobiphenyl

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is handled and bioassay studies are performed shall be negative in relation to the pressure in surrounding areas. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated.

(x) There shall be no connection between regulated areas and any other areas through the ventilation system.

(xi) A current inventory of 4-Nitrobiphenyl shall be maintained.

(xii) Ventilated apparatus such as laboratory type hoods, shall be tested at least semi-annually or immediately after ventilation modification or maintenance operations, by personnel fully qualified to certify correct containment and operation.

(d) **General regulated area requirements.**—(1) **Employee identification.** A daily roster of employees entering regulated areas shall be established and maintained. The rosters or a summary of the rosters, shall be retained for a period of 20 years. The rosters and/or summaries shall be provided upon request to authorized representatives of the Assistant Secretary and the Director. In the event that the employer ceases business without a successor, rosters shall be forwarded by registered mail to the Director.

(2) **Emergencies.** In an emergency, immediate measures including, but not limited to, the requirements of subdivisions (i), (ii), (iii), (iv), and (v) of this subparagraph shall be implemented: (i) The potentially affected area shall be evacuated as soon as the emergency has been determined.

(ii) Hazardous conditions created by the emergency shall be eliminated and the potentially affected area shall be decontaminated prior to the resumption of normal operations.

(iii) Special medical surveillance by a physician shall be instituted within 24 hours for employees present in the potentially affected area at the time of the emergency. A report of the medical surveillance and any treatment shall be included in the incident report, in accordance with paragraph (f) (2) of this section.

(iv) Where an employee has a known contact with 4-Nitrobiphenyl such employee shall be required to shower as soon as possible, unless contraindicated by physical injuries.

(v) An incident report on the emergency shall be reported as provided in paragraph (f) (2) of this section.

(3) **Hygiene facilities and practices.**

(i) Storage or consumption of food, storage or use of containers of beverages, storage or application of cosmetics, smoking, storage of smoking materials, tobacco products or other products for chewing, or the chewing of such products, are prohibited in regulated areas.

(ii) Where employees are required by this section to wash, washing facilities shall be provided in accordance with § 1910.141(d) (1) and (2) (ii) through (vii).

(iii) Where employees are required by this section to shower, shower facilities

shall be provided in accordance with § 1910.141(d) (3).

(iv) Where employees wear protective clothing and equipment, clean change rooms shall be provided, in accordance with § 1910.141(c), for the number of such employees required to change clothes.

(v) Where toilets are in regulated areas, such toilets shall be in a separate room.

(4) **Contamination control.** (i) Regulated areas, except for outdoor systems, shall be maintained under pressure negative with respect to nonregulated areas. Local exhaust ventilation may be used to satisfy this requirement. Clean makeup air in equal volume shall replace air removed.

(ii) Any equipment, material, or other item taken into or removed from a regulated area shall be done so in a manner that does not cause contamination in nonregulated areas or the external environment.

(iii) Decontamination procedures shall be established and implemented to remove 4-Nitrobiphenyl from the surfaces of materials, equipment and the decontamination facility.

(iv) Dry sweeping and dry mopping are prohibited.

(e) **Signs, information and training.**—(1) **Signs.** (i) Entrances to regulated areas shall be posted with signs bearing the legend:

**CANCER-SUSPECT AGENT
AUTHORIZED PERSONNEL ONLY**

(ii) Entrances to regulated areas containing operations covered in paragraph (c) (5) of this section shall be posted with signs bearing the legend:

**CANCER-SUSPECT AGENT EXPOSED IN THIS
AREA**

**INTERVIEWS SUIT INCLUDING GLOVES,
BOOTS, AND AIR-SUPPLIED HOOD RE-
QUIRED AT ALL TIMES**

AUTHORIZED PERSONNEL ONLY

(iii) Appropriate signs and instructions shall be posted at the entrance to, and exit from, regulated areas, informing employees of the procedures that must be followed in entering and leaving a regulated area.

(2) **Container contents identification.**

(i) Containers of 4-Nitrobiphenyl and containers required under paragraphs (c) (4) (v) and (c) (6) (vii) (b), and (c) (6) (viii) (b) of this section which are accessible only to, and handled only by, authorized employees, or by other employees trained in accordance with subparagraph (5) of this paragraph, may have contents identification limited to a generic or proprietary name, or other proprietary identification, of the carcinogen and percent.

(ii) Containers of 4-Nitrobiphenyl and containers required under paragraphs (c) (4) (v), (c) (6) (vii) (b), and (c) (6) (viii) (b) of this section which are accessible to, or handled by employees other than authorized employees or employees trained in accordance with subparagraph (5) of this paragraph shall have contents

identification which includes the full chemical name and Chemical Abstracts Service Registry number as listed in paragraph (a) (1) of this section.

(iii) Containers shall have the warning words "CANCER-SUSPECT AGENT" displayed immediately under or adjacent to the contents identification.

(iv) Containers which have 4-Nitrobiphenyl contents with corrosive or irritating properties shall have label statements warning of such hazards, noting, if appropriate, particularly sensitive or affected portions of the body.

(3) **Lettering.** Lettering on signs and instructions required by subparagraph (1) shall be a minimum letter height of 2 inches. Labels on containers required under this section shall not be less than ½ the size of the largest lettering on the package, and not less than 8 point type in any instance. *Provided*, That no such required lettering need be more than 1 inch in height.

(4) **Prohibited statements.** No statement shall appear on or near any required sign, label, or instruction which contradicts or detracts from the effect of any required warning, information or instruction.

(5) **Training and indoctrination.** (i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to: (a) The nature of the carcinogenic hazards of 4-Nitrobiphenyl, including local and systemic toxicity.

(b) The specific nature of the operation involving 4-Nitrobiphenyl which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of 4-Nitrobiphenyl;

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

(iii) All materials relating to the program shall be provided upon request to authorized representatives of the Assistant Secretary and the Director.

(f) **Reports.**—(1) **Operations.** Not later than March 1, 1974, the information required in subdivisions (i), (ii), (iii), and (iv) of this subparagraph shall be reported in writing to the nearest OSHA Area Director. Any changes in such information shall be similarly reported in writing within 15 calendar days of such

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change: (i) A brief description and in-plant location of the area(s) regulated and the address of each regulated area;

(ii) The name(s) and other identifying information as to the presence of 4-Nitrobiphenyl in each regulated area;

(iii) The number of employees in each regulated area, during normal operations including maintenance activities; and

(iv) The manner in which 4-Nitrobiphenyl is present in each regulated area; e.g. whether it is manufactured, processed, used, repackaged, released, stored, or otherwise handled.

(2) *Incidents.* Incidents which result in the release of 4-Nitrobiphenyl into any area where employees may be potentially exposed shall be reported in accordance with this subparagraph.

(i) A report of the occurrence of the incident and the facts obtainable at that time including a report on any medical treatment of affected employees shall be made within 24 hours to the nearest OSHA Area Director.

(ii) A written report shall be filed with the nearest OSHA Area Director within 15 calendar days thereafter and shall include: (a) A specification of the amount of material released, the amount of time involved, and an explanation of the procedure used in determining this figure;

(b) A description of the area involved, and the extent of known and possible employee exposure and area contamination; and

(c) A report of any medical treatment of affected employees, and any medical surveillance program implemented; and

(d) An analysis of the circumstances of the incident, and measures taken or to be taken, with specific completion dates, to avoid further similar releases.

(g) *Medical surveillance.* At no cost to the employee, a program of medical surveillance shall be established and implemented for employees considered for assignment to enter regulated areas, and for authorized employees. (1) *Examinations.* (i) Before an employee is assigned to enter a regulated area, a preassignment physical examination by a physician shall be provided. The examination shall include the personal history of the employee, family and occupational background, including genetic and environmental factors.

(ii) Authorized employees shall be provided periodic physical examinations, not less often than annually, following the preassignment examination.

(iii) In all physical examinations, the examining physician shall consider whether there exist conditions of increased risk, including reduced immunological competence, those undergoing treatment with steroids or cytotoxic agents, pregnancy and cigarette smoking.

(2) *Records.* (i) Employers of employees examined pursuant to this paragraph shall cause to be maintained complete and accurate records of all such medical examinations. Records shall be maintained for the duration of the employee's employment. Upon termination of the employee's employment, including retirement or death, or in the event that the employer ceases business without a

successor, records, or notarized true copies thereof, shall be forwarded by registered mail to the Director.

(ii) Records required by this paragraph shall be provided upon request to authorized representatives of the Assistant Secretary or the Director; and upon request of an employee or former employee, to a physician designated by the employee or to a new employer.

(iii) Any physician who conducts a medical examination required by this paragraph shall furnish to the employer a statement of the employee's suitability for employment in the specific exposure.

§ 1910.93.1 alpha-Naphthylamine.

(a) *Scope and application.* (1) This section applies to any area in which alpha-Naphthylamine, Chemical Abstracts Service Registry Number 134327 is manufactured, processed, repackaged, released, handled, or stored, but shall not apply to trans-shipment in sealed containers, except for the labeling requirements under paragraphs (e) (2), (3), and (4) of this section.

(2) This section shall not apply to solid or liquid mixtures containing less than 1.0 percent by weight or volume of alpha-Naphthylamine.

(3) This section will not apply to operations involving the destructive distillation of carbonaceous materials, such as occurs in coke ovens.

(b) *Definitions.* For the purposes of this section: (1) "Absolute filter" is one capable of retaining 99.97 percent of a mono disperse aerosol of 0.3 µm particles.

(2) "Authorized employee" means an employee whose duties require him to be in the regulated area and who has been specifically assigned by the employer.

(3) "Clean change room" means a room where employees put on clean clothing and/or protective equipment in an environment free of alpha-Naphthylamine. The clean change room shall be contiguous to and have an entry from a shower room, when the shower room facilities are otherwise required in this section.

(4) "Closed system" means an operation involving alpha-Naphthylamine where containment prevents the release of alpha-Naphthylamine into regulated areas, nonregulated areas, or the external environment.

(5) "Decontamination" means the inactivation of alpha-Naphthylamine or its safe disposal.

(6) "Director" means the Director, National Institute for Occupational Safety and Health, or any person directed by him or the Secretary of Health, Education, and Welfare to act for the Director.

(7) "Disposal" means the safe removal of alpha-Naphthylamine from the work environment.

(8) "Emergency" means an unforeseen circumstance or set of circumstances resulting in the release of alpha-Naphthylamine which may result in exposure to or contact with alpha-Naphthylamine.

(9) "External environment" means any environment external to regulated and nonregulated areas.

(10) "Isolated system" means a fully enclosed structure other than the vessel of containment of alpha-Naphthylamine, which is impervious to the passage of alpha-Naphthylamine, and which would prevent the entry of alpha-Naphthylamine into regulated areas, nonregulated areas, or the external environment, should leakage or spillage from the vessel of containment occur.

(11) "Laboratory type hood" is a device enclosed on three sides and the top and bottom, designed and maintained so as to draw air inward at an average linear face velocity of 150 feet per minute with a minimum of 125 feet per minute; designed, constructed, and maintained in such a way that an operation involving alpha-Naphthylamine within the hood does not require the insertion of any portion of any employee's body other than his hands and arms.

(12) "Nonregulated area" means any area under the control of the employer where entry and exit is neither restricted nor controlled.

(13) "Open-vessel system" means an operation involving alpha-Naphthylamine in an open vessel, which is not in an isolated system, a laboratory type hood, nor in any other system affording equivalent protection against the entry of alpha-Naphthylamine into regulated areas, nonregulated areas, or the external environment.

(14) "Protective clothing" means clothing designed to protect an employee against contact with or exposure to alpha-Naphthylamine.

(15) "Regulated area" means an area where entry and exit is restricted and controlled.

(c) *Requirements for areas containing alpha-Naphthylamine.* A regulated area shall be established by an employer where alpha-Naphthylamine is manufactured, processed, used, repackaged, released, handled or stored. All such areas shall be controlled in accordance with the requirements for the following category or categories describing the operation involved: (1) *Isolated systems.* Employees working with alpha-Naphthylamine within an isolated system, such as a "glove box" shall wash their hands and arms upon completion of the assigned task and before engaging in other activities not associated with the isolated system.

(2) *Closed system operation.* Within regulated areas where alpha-Naphthylamine is stored in sealed containers, or contained in a closed system, including piping systems, with any sample ports or openings closed while alpha-Naphthylamine is contained within: (i) Access shall be restricted to authorized employee only;

(ii) Employees shall be required to wash hands, forearms, face and neck upon each exit from the regulated areas close to the point of exit and before engaging in other activities.

(3) *Open vessel system operations.* Open-vessel system operations as defined

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in paragraph (b) (13) of this section are prohibited.

(4) *Transfer from a closed system, charging or discharging point operations, or otherwise opening a closed system.* In operations involving "laboratory type hoods," or in locations where alpha-Naphthylamine is contained in an otherwise "closed system," but is transferred, charged, or discharged into other normally closed containers, the provisions of this subparagraph shall apply.

(i) Access shall be restricted to authorized employees only.

(ii) Each operation shall be provided with continuous local exhaust ventilation so that air movement is always from ordinary work areas to the operation. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated. Clean makeup air shall be introduced in sufficient volume to maintain the correct operation of the local exhaust system.

(iii) Employees shall be provided with, and required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), and shoe covers and gloves prior to entering a regulated area.

(iv) Employees engaged in alpha-Naphthylamine handling operations shall be provided with and required to wear and use a half-face, filter-type respirator for dusts, mists, and fumes, in accordance with § 1910.134. A respirator affording higher levels of protection may be substituted.

(v) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified, as required under paragraphs (e) (2), (3), and (4) of this section.

(vi) Employees shall be required to wash hands, forearms, face and neck on each exit from the regulated area, close to the point of exit, and before engaging in other activities.

(vii) Employees shall be required to shower after the last exit of the day.

(viii) Drinking fountains are prohibited in the regulated area.

(5) *Maintenance and decontamination activities.* In cleanup of leaks or spills, maintenance or repair operations on contaminated systems or equipment, or any operations involving work in an area where direct contact with alpha-Naphthylamine could result, each authorized employee entering that area shall:

(i) Be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood in accordance with § 1910.134.

(ii) Be decontaminated before removing the protective garments and hood;

(iii) Be required to shower upon removing the protective garments and hood.

(6) *Laboratory activities.* The requirements of this subparagraph shall apply to research and quality control activities involving the use of alpha-Naphthylamine. (i) Mechanical pipetting aids shall be used for all pipetting procedures.

(ii) Experiments, procedures and equipment which could produce aerosols shall be confined to laboratory-type hoods or glove boxes.

(iii) Surfaces on which alpha-Naphthylamine is handled shall be protected from contamination.

(iv) Contaminated wastes and animal carcasses shall be collected in impervious containers which are closed and decontaminated prior to removal from the work area. Such wastes and carcasses shall be incinerated in such a manner that no carcinogenic products are released.

(v) All other forms of alpha-Naphthylamine shall be inactivated prior to disposal.

(vi) Laboratory vacuum systems shall be protected with high-efficiency scrubbers or with disposable absolute filters.

(vii) Employees engaged in animal support activities shall be (a) provided with, and required to wear, a complete protective clothing change, clean each day, including coveralls, or pants and shirt, foot covers, head covers, gloves, and appropriate respiratory protective equipment or devices; and

(b) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified as required under paragraphs (e) (2), (3), and (4) of this section.

(c) Required to wash hands, forearms, face and neck upon each exit from the regulated area close to the point of exit, and before engaging in other activities; and

(d) Required to shower after the last exit of the day.

(viii) Employees, other than those engaged only in animal support activities, each day shall be (a) provided with and required to wear a clean change of appropriate laboratory clothing, such as a solid front gown, surgical scrub suit, or fully buttoned laboratory coat.

(b) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified as required under paragraphs (e) (2), (3), and (4) of this section.

(c) Required to wash hands, forearms, face and neck upon each exit from the regulated area close to the point of exit, and before engaging in other activities.

(ix) Air pressure in laboratory areas and animal rooms where alpha-Naphthylamine is handled and bioassay

studies are performed shall be negative in relation to the pressure in surrounding areas. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated.

(x) There shall be no connection between regulated areas and any other areas through the ventilation system.

(xi) A current inventory of alpha-Naphthylamine shall be maintained.

(xii) Ventilated apparatus such as laboratory type hoods, shall be tested at least semi-annually or immediately after ventilation modification or maintenance operations, by personnel fully qualified to certify correct containment and operation.

(d) *General regulated area requirements.*—(1) *Employee identification.* A daily roster of employees entering regulated areas shall be established and maintained. The rosters or a summary of the rosters, shall be retained for a period of 20 years. The rosters and/or summaries shall be provided upon request to authorized representatives of the Assistant Secretary and the Director. In the event that the employer ceases business without a successor, rosters shall be forwarded by registered mail to the Director.

(2) *Emergencies.* In an emergency, immediate measures including, but not limited to, the requirements of subdivisions (i), (ii), (iii), (iv), and (v) of this subparagraph shall be implemented. (i) The potentially affected area shall be evacuated as soon as the emergency has been determined.

(ii) Hazardous conditions created by the emergency shall be eliminated and the potentially affected areas shall be decontaminated prior to the resumption of normal operations.

(iii) Special medical surveillance by a physician shall be instituted within 24 hours for employees present in the potentially affected area at the time of the emergency. A report of the medical surveillance and any treatment shall be included in the incident report, in accordance with paragraph (f) (2) of this section.

(iv) Where an employee has a known contact with alpha-Naphthylamine, such employee shall be required to shower as soon as possible, unless contraindicated by physical injuries.

(v) An incident report on the emergency shall be reported as provided in paragraph (f) (2) of this section.

(3) *Hygiene facilities and practices.* (i) Storage or consumption of food, storage or use of containers of beverages, storage or application of cosmetics, smoking, storage of smoking materials, tobacco products or other products for chewing, or the chewing of such products, are prohibited in regulated areas.

(ii) Where employees are required by this section to wash, washing facilities shall be provided in accordance with § 1910.141(d) (1) and (2) (ii) through (vii).

(iii) Where employees are required by this section to shower, shower facilities shall be provided in accordance with § 1910.141(d) (3).

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(iv) Where employees wear protective clothing and equipment clean change rooms shall be provided, in accordance with § 1910.141(e), for the number of such employees required to change clothes.

(v) Where toilets are in regulated areas, such toilets shall be in a separate room.

(4) **Contamination control.** (i) Regulated areas, except for outdoor systems, shall be maintained under pressure negative with respect to nonregulated areas. Local exhaust ventilation may be used to satisfy this requirement. Clean make-up air in equal volume shall replace air removed.

(ii) Any equipment, material, or other item taken into or removed from a regulated area shall be done so in a manner that does not cause contamination in nonregulated areas or the external environment.

(iii) Decontamination procedures shall be established and implemented to remove alpha-Naphthylamine from the surfaces of materials, equipment and the decontamination facility.

(iv) Dry sweeping and dry mopping are prohibited.

(e) **Signs, information and training.**—(1) **Signs.** (i) Entrances to regulated areas shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT
AUTHORIZED PERSONNEL ONLY

(ii) Entrances to regulated areas containing operations covered in paragraph (c) (5) of this section shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT EXPOSED IN THIS
AREA

IMPERVIOUS SUIT INCLUDING GLOVES,
BOOTS, AND AIR-SUPPLIED HOOD RE-
QUIRED AT ALL TIMES

AUTHORIZED PERSONNEL ONLY

(iii) Appropriate signs and instructions shall be posted at the entrance to, and exit from, regulated areas, informing employees of the procedures that must be followed in entering and leaving a regulated area.

(2) **Container contents identification.** (i) Containers of alpha-Naphthylamine and containers required under paragraphs (c) (4) (v) and (c) (6) (vii) (b), and (c) (6) (viii) (b) of this section which are accessible only to, and handled only by, authorized employees, or by other employees trained in accordance with subparagraph (5) of this paragraph, may have contents identification limited to a generic or proprietary name, or other proprietary identification, of the carcinogen and percent.

(ii) Containers of alpha-Naphthylamine and containers required under paragraphs (c) (4) (v), (c) (6) (vii) (b), and (c) (6) (viii) (b) of this section which are accessible to, or handled by, employees other than authorized employees or employees trained in accordance with subparagraph (5) of this paragraph shall have contents identification which includes the full chemical name and Chemical Abstracts Service Registry

number, as listed in paragraph (a) (1) of this section.

(iii) Containers shall have the warning words "CANCER-SUSPECT AGENT" displayed immediately under or adjacent to the contents identification.

(iv) Containers which have alpha-Naphthylamine contents with corrosive or irritating properties shall have label statements warning of such hazards, noting, if appropriate, particularly sensitive or affected portions of the body.

(3) **Lettering.** Lettering on signs and instructions required by subparagraph (1) of this paragraph shall be a minimum letter height of 2 inches. Labels on containers required under this section shall not be less than 1/2 the size of the largest lettering on the package, and not less than 8 point type in any instance: *Provided*, That no such required lettering need be more than 1 inch in height.

(4) **Prohibited statements.** No statement shall appear on or near any required sign, label, or instruction which contradicts or detracts from the effect of any required warning, information or instruction.

(5) **Training and indoctrination.** (i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to: (a) The nature of the carcinogenic hazards of alpha-Naphthylamine, including local and systemic toxicity;

(b) The specific nature of the operation involving alpha-Naphthylamine which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of alpha-Naphthylamine;

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

(iii) All materials relating to the program shall be provided upon request to authorized representatives of the Assistant Secretary and the Director.

(f) **Reports.**—(1) **Operations.** Not later than March 1, 1974, the information required in subdivisions (i), (ii), (iii), and (iv) of this subparagraph shall be reported in writing to the nearest OSHA Area Director. Any changes in such information shall be similarly reported in writing within 15 calendar days of such change. (i) A brief description and in-

plant location of the area(s) regulated and the address of each regulated area;

(ii) The name(s) and other identifying information as to the presence of alpha-Naphthylamine in each regulated area;

(iii) The number of employees in each regulated area, during normal operations including maintenance activities; and

(iv) The manner in which alpha-Naphthylamine is present in each regulated area; e.g. whether it is manufactured, processed, used, repackaged, released, stored, or otherwise handled.

(2) **Incidents.** Incidents which result in the release of alpha-Naphthylamine into any area where employees may be potentially exposed shall be reported in accordance with this subparagraph. (i) A report of the occurrence of the incident and the facts obtainable at that time including a report on any medical treatment of affected employees shall be made within 24 hours to the nearest OSHA Area Director.

(ii) A written report shall be filed with the nearest OSHA Area Director within 15 calendar days thereafter and shall include:

(a) A specification of the amount of material released, the amount of time involved, and an explanation of the procedure used in determining this figure;

(b) A description of the area involved, and the extent of known and possible employee exposure and area contamination; and

(c) A report of any medical treatment of affected employees, and any medical surveillance program implemented; and

(d) An analysis of the circumstances of the incident, and measures taken or to be taken, with specific completion dates, to avoid further similar releases;

(g) **Medical surveillance.** At no cost to the employee, a program of medical surveillance shall be established and implemented for employees considered for assignment to enter regulated areas, and for authorized employees. (1) **Examinations.** (i) Before an employee is assigned to enter a regulated area, a preassignment physical examination by a physician shall be provided. The examination shall include the personal history of the employee, family and occupational background, including genetic and environmental factors.

(ii) Authorized employees shall be provided periodic physical examinations, not less often than annually, following the preassignment examination.

(iii) In all physical examinations, the examining physician shall consider whether there exist conditions of increased risk, including reduced immunological competence, those undergoing treatment with steroids or cytotoxic agents, pregnancy and cigarette smoking.

(2) **Records.** (i) Employers of employees examined pursuant to this paragraph shall cause to be maintained complete and accurate records of all such medical examinations. Records shall be maintained for the duration of the employee's employment. Upon termination of the employee's employment, including

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ment or death, or in the event that the employer ceases business without a successor, records, or notarized true copies thereof, shall be forwarded by registered mail to the Director.

(ii) Records required by this paragraph shall be provided upon request to authorized representatives of the Assistant Secretary or the Director; and upon request of an employee or former employee, to a physician designated by the employee or to a new employer.

(iii) Any physician who conducts a medical examination required by this paragraph shall furnish to the employer a statement of the employee's suitability for employment in the specific exposure.

§ 1910.97. 4,4'-Methylene bis(2-chloroaniline).

(a) *Scope and application.* (1) This section applies to any area in which 4,4'-Methylene bis(2-chloroaniline), Chemical Abstracts Service Registry Number 101144 is manufactured, processed, repackaged, released, handled, or stored, but shall not apply to trans-shipment in sealed containers, except for the labeling requirements under paragraphs (e) (2), (3), and (4) of this section.

(2) This section shall not apply to solid or liquid mixtures containing less than 1.0 percent by weight or volume of 4,4'-Methylene bis(2-chloroaniline).

(b) *Definitions.* For the purposes of this section: (1) "Absolute filter" is one capable of retaining 99.97 percent of a mono-disperse aerosol of 0.3 μ m particles.

(2) "Authorized employee" means an employee whose duties require him to be in the regulated area and who has been specifically assigned by the employer.

(3) "Clean change room" means a room where employees put on clean clothing and/or protective equipment in an environment free of 4,4'-Methylene bis(2-chloroaniline). The clean change room shall be contiguous to and have an entry from a shower room, when the shower room facilities are otherwise required in this section.

(4) "Closed system" means an operation involving 4,4'-Methylene bis(2-chloroaniline) where containment prevents the release of 4,4'-Methylene bis(2-chloroaniline) into regulated areas, nonregulated areas, or the external environment.

(5) "Decontamination" means the inactivation of 4,4'-Methylene bis(2-chloroaniline) or its safe disposal.

(6) "Director" means the Director, National Institute for Occupational Safety and Health, or any person directed by him or the Secretary of Health, Education, and Welfare to act for the Director.

(7) "Disposal" means the safe removal of 4,4'-Methylene bis(2-chloroaniline) from the work environment.

(8) "Emergency" means an unforeseen circumstance or set of circumstances resulting in the release of 4,4'-Methylene bis(2-chloroaniline) which may result in exposure to or contact with 4,4'-Methylene bis(2-chloroaniline).

(9) "External environment" means any environment external to regulated and nonregulated areas.

(10) "Isolated system" means a fully enclosed structure other than the vessel of containment, of 4,4'-Methylene bis(2-chloroaniline), which is impervious to the passage of 4,4'-Methylene bis(2-chloroaniline), and which would prevent the entry of 4,4'-Methylene bis(2-chloroaniline) into regulated areas, nonregulated areas, or the external environment, should leakage or spillage from the vessel of containment occur.

(11) "Laboratory type hood" is a device enclosed on three sides and the top and bottom, designed and maintained so as to draw air inward at an average linear face velocity of 150 feet per minute with a minimum of 125 feet per minute; designed, constructed, and maintained in such a way that an operation involving 4,4'-Methylene bis(2-chloroaniline) within the hood does not require the insertion of any portion of any employee's body other than his hands and arms.

(12) "Nonregulated area" means any area under the control of the employer where entry and exit is neither restricted nor controlled.

(13) "Open-vessel system" means an operation involving 4,4'-Methylene bis(2-chloroaniline) in an open vessel, which is not in an isolated system, a laboratory type hood, nor in any other system affording equivalent protection against the entry of 4,4'-Methylene bis(2-chloroaniline) into regulated areas, nonregulated areas, or the external environment.

(14) "Protective clothing" means clothing designed to protect an employee against contact with or exposure to 4,4'-Methylene bis(2-chloroaniline).

(15) "Regulated area" means an area where entry and exit is restricted and controlled.

(c) *Requirements for areas containing 4,4'-Methylene bis(2-chloroaniline).* A regulated area shall be established by an employer where 4,4'-Methylene bis(2-chloroaniline) is manufactured, processed, used, repackaged, released, handled or stored. All such areas shall be controlled in accordance with the requirements for the following category or categories describing the operation involved: (1) *Isolated systems.* Employees working with 4,4'-Methylene bis(2-chloroaniline) within an isolated system, such as a "glove box" shall wash their hands and arms upon completion of the assigned task and before engaging in other activities not associated with the isolated system.

(2) *Closed system operation.* Within regulated areas where 4,4'-Methylene bis(2-chloroaniline) is stored in sealed containers, or contained in a closed system, including piping systems, with any sample ports or openings closed while 4,4'-Methylene bis(2-chloroaniline) is contained within: (i) Access shall be restricted to authorized employees only;

(ii) Employees shall be required to wash hands, forearms, face and neck upon each exit from the regulated areas, close to the point of exit and before engaging in other activities.

(3) *Open vessel system operations.* Open vessel system operations as defined

in paragraph (b) (13) of this section are prohibited.

(4) *Transfer from a closed system, charging or discharging point operations, or otherwise opening a closed system.* In operations involving "laboratory type hoods," or in locations where 4,4'-Methylene bis(2-chloroaniline) is contained in an otherwise "closed system," but is transferred, charged, or discharged into other normally closed containers, the provisions of this subparagraph shall apply. (i) Access shall be restricted to authorized employees only;

(ii) Each operation shall be provided with continuous local exhaust ventilation so that air movement is always from ordinary work areas to the operation. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated. Clean makeup air shall be introduced in sufficient volume to maintain the correct operation of the local exhaust system.

(iii) Employees shall be provided with, and required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), shoe covers and gloves prior to entering the regulated area.

(iv) Employees engaged in 4,4'-Methylene bis(2-chloroaniline) handling operations shall be provided with and required to wear and use a half-face, filter-type respirator for dusts, mists, and fumes, in accordance with § 1910.134. A respirator affording higher levels of protection may be substituted.

(v) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified, as required under paragraphs (e) (2), (3), and (4) of this section.

(vi) Employees shall be required to wash hands, forearms, face and neck on each exit from the regulated area, close to the point of exit, and before engaging in other activities.

(vii) Employees shall be required to shower after the last exit of the day.

(viii) Drinking fountains are prohibited in the regulated area.

(5) *Maintenance and decontamination activities.* In cleanup of leaks or spills, maintenance or repair operations on contaminated systems or equipment, or any operations involving work in an area where direct contact with 4,4'-Methylene bis(2-chloroaniline) could result, each authorized employee entering that area shall: (i) Be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood in accordance with § 1910.134.

(ii) Be decontaminated before removing the protective garments and hood;

(iii) Be required to shower upon removing the protective garments and hood.

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(b) *Laboratory activities.* The requirements of this subparagraph shall apply to research and quality control activities involving the use of 4,4'-Methylene bis(2-chloroaniline). (i) Mechanical pipetting aids shall be used for all pipetting procedures.

(ii) Experiments, procedures and equipment which could produce aerosols shall be confined to laboratory-type hoods or glove boxes.

(iii) Surfaces on which 4,4'-Methylene bis(2-chloroaniline) is handled shall be protected from contamination.

(iv) Contaminated wastes and animal carcasses shall be collected in impervious containers which are closed and decontaminated prior to removal from the work area. Such wastes and carcasses shall be incinerated in such a manner that no carcinogenic products are released.

(v) All other forms of 4,4'-Methylene bis(2-chloroaniline) shall be inactivated prior to disposal.

(vi) Laboratory vacuum systems shall be protected with high-efficiency scrubbers or with disposable absolute filters.

(vii) Employees engaged in animal support activities shall be (a) provided with, and required to wear, a complete protective clothing change, clean each day, including coveralls or pants and shirt, foot covers, head covers, gloves, and appropriate respiratory protective equipment or devices; and

(b) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified as required under paragraphs (e) (2), (3), and (4) of this section.

(c) Required to wash hands, forearms, face and neck upon each exit from the regulated area close to the point of exit, and before engaging in other activities; and

(d) Required to shower after the last exit of the day.

(viii) Employees, other than those engaged only in animal support activities, each day shall be (a) provided with and required to wear a clean change of appropriate laboratory clothing, such as a solid front gown, surgical scrub suit, or fully buttoned laboratory coat.

(b) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified as required under paragraphs (e) (2), (3), and (4) of this section.

(c) Required to wash hands, forearms, face and neck upon each exit from the regulated area close to the point of exit, and before engaging in other activities.

(ix) Air pressure in laboratory areas and animal rooms where 4,4'-Methylene bis(2-chloroaniline) is handled and bioassay studies are performed shall be negative in relation to the pressure in surrounding areas. Exhaust air shall not be discharged to regulated areas, non-regulated areas or the external environment unless decontaminated.

(x) There shall be no connection between regulated areas and any other areas through the ventilation system.

(xi) A current inventory of 4,4'-Methylene bis(2-chloroaniline) shall be maintained.

(xii) Ventilated apparatus such as laboratory type hoods, shall be tested at least semi-annually or immediately after ventilation modification or maintenance operations, by personnel fully qualified to certify correct containment and operation.

(7) *Premixed solutions.* Where 4,4'-Methylene bis(2-chloroaniline) is present only in a single solution at a temperature not exceeding 120°F, the establishment of a regulated area is not required; however, (i) Only authorized employees shall be permitted to handle such materials;

(ii) Each day employees shall be provided with and required to wear a clean change of protective clothing (smocks, coveralls, or long-sleeved shirts and pants), gloves, and other protective garments and equipment necessary to prevent contact with the solution in the processed used;

(iii) Employees shall be required to remove and leave protective clothing and equipment when leaving the work area at the end of the work day, or at any time solution is spilled on such clothing or equipment. Used clothing and equipment shall be placed in impervious containers for purposes of decontamination or disposal. The contents of such impervious containers shall be identified, as required under paragraphs (e) (2), (3), and (4) of this section.

(iv) Employees shall be required to wash hands and face after removing such clothing and equipment and before engaging in other activities;

(v) Employees assigned to work covered by this subparagraph shall be deemed to be working in regulated areas for the purposes of paragraphs (d) (1), (2), (3) (i) and (ii), and (4) (ii) and (iv), (e), (f), and (g) of this section;

(vi) Work areas where solution may be spilled shall be (a) covered daily or after any spill with a clean covering; or

(b) Clean thoroughly daily and after any spill.

(d) *General regulated area requirements—(1) Employee identification.* A daily roster of employees entering regulated areas shall be established and maintained. The rosters or a summary of the rosters shall be retained for a period of 20 years. The rosters and/or summaries shall be provided upon request to authorized representatives of the Assistant Secretary and the Director. In the event that the employer ceases business without a successor, rosters shall be forwarded by registered mail to the Director.

(2) *Emergencies.* In an emergency immediate measures including, but not limited to, the requirements of subdivisions (i), (ii), (iii), (iv), and (v) of this subparagraph shall be implemented. The potentially affected area shall be evacuated as soon as the emergency has been determined.

(ii) Hazardous conditions created by the emergency shall be eliminated; the potentially affected area shall be decontaminated prior to the resumption of normal operations.

(iii) Special medical surveillance by a physician shall be instituted within 24 hours for employees present in the potentially affected area at the time of the emergency. A report of the medical surveillance and any treatment shall be included in the incident report, in accordance with paragraph (f) (2) of this section.

(iv) Where an employee has a known contact with 4,4'-Methylene bis(2-chloroaniline) such employee shall be required to shower as soon as possible unless contraindicated by physical injuries.

(v) An incident report on the emergency shall be reported as provided in paragraph (f) (2) of this section.

(3) *Hygiene facilities and practices.* (i) Storage or consumption of food, storage or use of containers of beverages, storage or application of cosmetics, storage of smoking materials, tobacco products or other products, chewing, or the chewing of such products are prohibited in regulated areas.

(ii) Where employees are required by this section to wash, washing facilities shall be provided in accordance with § 1910.141(d) (1) and (2) (ii) through (vii).

(iii) Where employees are required by this section to shower facilities shall be provided in accordance with § 1910.141(d) (3).

(iv) Where employees wear protective clothing and equipment clean change rooms shall be provided, in accordance with § 1910.141(e), for the number of such employees required to change clothes.

(v) Where toilets are in regulated areas, such toilets shall be in a separate room.

(4) *Contamination control.* (i) Regulated areas, except for outdoor systems, shall be maintained under pressure negative with respect to nonregulated areas. Local exhaust ventilation may be used to satisfy this requirement. Clean room air in equal volume shall replace air removed.

(ii) Any equipment, material, or item taken into or removed from a regulated area shall be done so in a manner that does not cause contamination of nonregulated areas or the external environment.

(iii) Decontamination procedures shall be established and implemented to remove 4,4'-Methylene bis(2-chloroaniline) from the surfaces of material.

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ment and the decontamination facility.

(iv) Dry sweeping and dry mopping are prohibited.

(e) Signs, information and training—

(i) Signs. (1) Entrances to regulated areas shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT

AUTHORIZED PERSONNEL ONLY

(ii) Entrances to regulated areas containing operations covered in paragraph (c)(5) of this section shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT EXPOSED IN THIS AREA

IMPERVIOUS SUIT INCLUDING GLOVES, BOOTS, AND AIR-SUPPLIES HOOD REQUIRED AT ALL TIMES

AUTHORIZED PERSONNEL ONLY

(iii) Appropriate signs and instructions shall be posted at the entrance to, and exit from, regulated areas, informing employees of the procedures that must be followed in entering and leaving a regulated area.

(2) Container contents identification.

(i) Containers of 4,4'-Methylene bis(2-chloroaniline) and containers required under paragraphs (c)(4)(v) and (c)(6)(vii)(b), and (c)(6)(viii)(b) and (c)(7)(iii) of this section which are accessible only to, and handled only by, authorized employees, or by other employees trained in accordance with subparagraph (5) of this paragraph, may have contents identification limited to a generic or proprietary name, or other proprietary identification, of the carcinogen and percent.

(ii) Containers of 4,4'-Methylene bis(2-chloroaniline) and containers required under paragraphs (c)(4)(v), (c)(6)(vii)(b), and (c)(6)(viii)(b) and (c)(7)(iii) of this section which are accessible to, or handled by employees other than authorized employees or employees trained in accordance with subparagraph 5 of this paragraph shall have contents identification which includes the full chemical name and Chemical Abstracts Service Registry number as listed in paragraph (a)(1) of this section.

(iii) Containers shall have the warning words "CANCER-SUSPECT AGENT" displayed immediately under or adjacent to the contents identification.

(iv) Containers which have 4,4'-Methylene bis(2-chloroaniline) contents with corrosive or irritating properties shall have label statements warning of such hazards, noting, if appropriate, particularly sensitive or affected portions of the body.

(3) Lettering. Lettering on signs and instructions required by subparagraph (1) of this paragraph shall be a minimum letter height of 2 inches. Labels on containers required under this section shall not be less than 1/2 the size of the largest lettering on the package, and not less than 3 point type in any instance; provided that no such required lettering need be more than 1 inch in height.

(4) Prohibited statements. No statement shall appear on or near any required sign, label, or instruction which contradicts or detracts from the effect of any required warning, information or instruction.

(5) Training and indoctrination. (i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to: (a) The nature of the carcinogenic hazards of 4,4'-Methylene bis(2-chloroaniline), including local and systemic toxicity;

(b) The specific nature of the operation involving 4,4'-Methylene bis(2-chloroaniline) which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of 4,4'-Methylene bis(2-chloroaniline);

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees, shall be familiarized with their terms, and rehearsed in their application.

(iii) All materials relating to the program shall be provided upon request to authorized representatives of the Assistant Secretary and the Director.

(f) Reports.—(1) Operations. Not later than March 1, 1974, the information required in subdivisions (i), (ii), (iii), and (iv) of this subparagraph shall be reported in writing to the nearest OSHA Area Director. Any changes in such information shall be similarly reported in writing within 15 calendar days of such change. (i) A brief description and in-plant location of the area(s) regulated and the address of each regulated area;

(ii) The name(s) and other identifying information as to the presence of 4,4'-Methylene bis(2-chloroaniline) in each regulated area;

(iii) The number of employees in each regulated area, during normal operations including maintenance activities; and

(iv) The manner in which 4,4'-Methylene bis(2-chloroaniline) is present in each regulated area; e.g. whether it is manufactured, processed, used, repackaged, released, stored, or otherwise handled.

(2) Incidents. Incidents which result in the release of 4,4'-Methylene bis(2-chloroaniline) into any area where em-

ployees may be potentially exposed shall be reported in accordance with this subparagraph. (i) A report of the occurrence of the incident and the facts obtainable at that time including a report on any medical treatment of affected employees shall be made within 24 hours to the nearest OSHA Area Director.

(ii) A written report shall be filed with the nearest OSHA Area Director within 15 calendar days thereafter and shall include: (a) A specification of the amount of material released, the amount of time involved, and an explanation of the procedure used in determining this figure;

(b) A description of the area involved, and the extent of known and possible employee exposure and area contamination; and

(c) A report of any medical treatment of affected employees and any medical surveillance program implemented; and

(d) An analysis of the circumstances of the incident, and measures taken or to be taken, with specific completion dates, to avoid further similar releases.

(g) Medical surveillance. At no cost to the employee, a program of medical surveillance shall be established and implemented for employees considered for assignment to enter regulated areas, and for authorized employees. (1) Examinations. (i) Before an employee is assigned to enter a regulated area, a preassignment physical examination by a physician shall be provided. The examination shall include the personal history of the employee, family and occupational background, including genetic and environmental factors.

(ii) Authorized employees shall be provided periodic physical examinations, not less often than annually, following the preassignment examination.

(iii) In all physical examinations, the examining physician shall consider whether there exist conditions of increased risk, including reduced immunological competence, those undergoing treatment with steroids or cytotoxic agents, pregnancy and cigarette smoking.

(2) Records. (i) Employers of employees examined pursuant to this paragraph shall cause to be maintained complete and accurate records of all such medical examinations. Records shall be maintained for the duration of the employee's employment. Upon termination of the employee's employment, including retirement or death, or in the event that the employer ceases business without a successor, records, or notarized true copies thereof, shall be forwarded by registered mail to the Director.

(ii) Records required by this paragraph shall be provided upon request to authorized representatives of the Assistant Secretary or the Director; and upon request of an employee or former employee, to a physician designated by the employee or to a new employer.

(iii) Any physician who conducts a medical examination required by this paragraph shall furnish to the employer a statement of the employee's suitability for employment in the specific exposure.

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§ 1910.93f. Methyl chloromethyl ether.

(a) *Scope and application.* (1) This section applies to any area in which methyl chloromethyl ether, Chemical Abstracts Service Registry Number 107302 is manufactured, processed, repackaged, released, handled, or stored, but shall not apply to trans-shipment in sealed containers, except for the labeling requirements under paragraphs (e) (2), (3), and (4) of this section.

(2) This section shall not apply to solid or liquid mixtures containing less than 0.1 percent by weight or volume of methyl chloromethyl ether.

(b) *Definitions.* For the purposes of this section: (1) "Absolute filter" is one capable of retaining 99.97 percent of a mono disperse aerosol of 0.3 μ m particles.

(2) "Authorized employee" means an employee whose duties require him to be in the regulated area and who has been specifically assigned by the employer.

(3) "Clean change room" means a room where employees put on clean clothing and/or protective equipment in an environment free of methyl chloromethyl ether. The clean change room shall be contiguous to and have an entry from a shower room, when the shower room facilities are otherwise required in this section.

(4) "Closed system" means an operation involving methyl chloromethyl ether where containment prevents the release of methyl chloromethyl ether into regulated areas, nonregulated areas, or the external environment.

(5) "Decontamination" means the inactivation of methyl chloromethyl ether or its safe disposal.

(6) "Director" means the Director, National Institute for Occupational Safety and Health, or any person directed by him or the Secretary of Health, Education, and Welfare to act for the Director.

(7) "Disposal" means the safe removal of methyl chloromethyl ether from the work environment.

(8) "Emergency" means an unforeseen circumstance or set of circumstances resulting in the release of methyl chloromethyl ether which may result in exposure to or contact with methyl chloromethyl ether.

(9) "External environment" means any environment external to regulated and nonregulated areas.

(10) "Isolated system" means a fully enclosed structure other than the vessel of containment of methyl chloromethyl ether, which is impervious to the passage of methyl chloromethyl ether, and which would prevent the entry of methyl chloromethyl ether into regulated areas, nonregulated areas, or the external environment, should leakage or spillage from the vessel of containment occur.

(11) "Laboratory type hood" is a device enclosed on three sides and the top and bottom, designed and maintained so as to draw air inward at an average linear face velocity of 150 feet per minute with a minimum of 125 feet per minute; designed, constructed, and maintained in such a way that an operation involving methyl chloromethyl ether within the hood does not require the insertion of

any portion of any employee's body other than his hands and arms.

(12) "Nonregulated area" means any area under the control of the employer where entry and exit is neither restricted nor controlled.

(13) "Open-vessel system" means an operation involving methyl chloromethyl ether in an open vessel, which is not in an isolated system, a laboratory type hood, nor in any other system affording equivalent protection against the entry of methyl chloromethyl ether into regulated areas, nonregulated areas, or the external environment.

(14) "Protective clothing" means clothing designed to protect an employee against contact with or exposure to methyl chloromethyl ether.

(15) "Regulated area" means an area where entry and exit is restricted and controlled.

(c) *Requirements for areas containing methyl chloromethyl ether.* A regulated area shall be established by an employer where methyl chloromethyl ether is manufactured, processed, used, repackaged, released, handled or stored. All such areas shall be controlled in accordance with the requirements for the following category or categories describing the operation involved: (1) *Isolated systems.* Employees working with methyl chloromethyl ether within an isolated system, such as a "glove box" shall wash their hands and arms upon completion of the assigned task and before engaging in other activities not associated with the isolated system.

(2) *Closed system operation.* Within regulated areas where methyl chloromethyl ether is stored in sealed containers, or contained in a closed system, including piping systems, with any sample ports or openings closed while methyl chloromethyl ether is contained within. Access shall be restricted to authorized employees only.

(3) *Open vessel system operations.* Open vessel system operations as defined in paragraph (b) (13) of this section are prohibited.

(4) *Transfer from a closed system, charging or discharging point operations, or otherwise opening a closed system.* In operations involving "laboratory type hoods" or in locations where methyl chloromethyl ether is contained in an otherwise "closed system," but is transferred, charged, or discharged into other normally closed containers, the provisions of this subparagraph shall apply. (i) Access shall be restricted to authorized employees only;

(ii) Each operation shall be provided with continuous local exhaust ventilation so that air movement is always from ordinary work areas to the operation. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated. Clean makeup air shall be introduced in sufficient volume to maintain the correct operation of the local exhaust system.

(iii) Employees shall be provided with, and required to wear, clean, full body protective clothing (smocks, coveralls, or

long-sleeved shirt and pants), and gloves prior to entering the regulated area.

(iv) Employees engaged in methyl chloromethyl ether handling operations shall be provided with and required to wear and use a full-face, supplied air respirator, of the continuous flow or pressure-demand type, in accordance with § 1910.134.

(v) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified, as required under paragraphs (e) (2), (3), and (4) of this section.

(vi) Drinking fountains are prohibited in the regulated area.

(5) *Maintenance and decontamination activities.* In cleanup of leaks or spills, maintenance or repair operations on contaminated systems or equipment, or any operations involving work in an area where direct contact with methyl chloromethyl ether could result, each authorized employee entering that area shall: (i) Be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood in accordance with § 1910.134.

(ii) Be decontaminated before removing the protective garments and hood;

(iii) Be required to shower upon removing the protective garments and hood.

(6) *Laboratory activities.* The requirements of this subparagraph shall apply to research and quality control activities involving the use of methyl chloromethyl ether. (i) Mechanical pipetting aids shall be used for all pipetting procedures.

(ii) Experiments, procedures and equipment which could produce aerosols shall be confined to laboratory-type hoods or glove boxes.

(iii) Surfaces on which methyl chloromethyl ether is handled shall be protected from contamination.

(iv) Contaminated wastes and animal carcasses shall be collected in impervious containers which are closed and decontaminated prior to removal from the work area. Such wastes and carcasses shall be incinerated in such a manner that no carcinogenic products are released.

(v) All other forms of methyl chloromethyl ether shall be inactivated prior to disposal.

(vi) Laboratory vacuum systems shall be protected with high-efficiency scrubbers.

(vii) Employees engaged in animal support activities shall be (a) provided with, and required to wear, a complete protective clothing change, clean each day, including coveralls or pants and shirt, foot covers, head covers, gloves, and appropriate respiratory protective equipment or devices; and

(b) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and

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equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified as required under paragraphs (e) (2), (3), and (4) of this section.

(c) Required to shower after the last exit of the day.

(viii) Employees, other than those engaged only in animal support activities, each day shall be (a) provided with and required to wear a clean change of appropriate laboratory clothing, such as a solid front gown, surgical scrub suit, or fully buttoned laboratory coat.

(b) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified as required under paragraphs (e) (2), (3), and (4) of this section.

(c) Required to wash hands, forearms, face and neck upon each exit from the regulated area close to the point of exit, and before engaging in other activities.

(ix) Air pressure in laboratory areas and animal rooms where methyl chloromethyl ether is handled and bioassay studies are performed shall be negative in relation to the pressure in surrounding areas. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated.

(x) There shall be no connection between regulated areas and any other areas through the ventilation system.

(xi) A current inventory of methyl chloromethyl ether shall be maintained.

(xii) Ventilated apparatus such as laboratory type hoods, shall be tested at least semi-annually or immediately after ventilation modification or maintenance operations, by personnel fully qualified to certify correct containment and operation.

(d) General regulated area requirements.—(1) Employee identification. A daily roster of employees entering regulated areas shall be established and maintained. The rosters or a summary of the rosters, shall be retained for a period of 20 years. The rosters and/or summaries shall be provided upon request to authorized representatives of the Assistant Secretary and the Director. In the event that the employer ceases business without a successor, rosters shall be forwarded by registered mail to the Director.

(2) Emergencies. In an emergency, immediate measures including, but not limited to, the requirements of subdivisions (i), (ii), (iii), (iv), and (v) of this subparagraph shall be implemented. (i) The potentially affected area shall be evacuated as soon as the emergency has been determined.

(ii) Hazardous conditions created by the emergency shall be eliminated and

the potentially affected area shall be decontaminated prior to the resumption of normal operations.

(iii) Special medical surveillance by a physician shall be instituted within 24 hours for employees present in the potentially affected area at the time of the emergency. A report of the medical surveillance and any treatment shall be included in the incident report, in accordance with paragraph (f) (2) of this section.

(iv) Where an employee has a known contact with methyl chloromethyl ether, such employee shall be required to shower as soon as possible, unless contraindicated by physical injuries.

(v) An incident report on the emergency shall be reported as provided in paragraph (f) (2) of this section.

(3) Hygiene facilities and practices. (i) Storage or consumption of food, storage or use of containers of beverages, storage or application of cosmetics, smoking, storage of smoking materials, tobacco products or other products for chewing, or the chewing of such products, are prohibited in regulated areas.

(ii) Where employees wear protective clothing and equipment clean change rooms shall be provided, in accordance with § 1910.141(e), for the number of such employees required to change clothes.

(iii) Where toilets are in regulated areas, such toilets shall be in a separate room.

(iv) Where employees are required by this section to shower, shower facilities shall be provided in accordance with § 1910.141(d) (1) and (2) (ii) through (vii).

(v) Where employees are required by this section to shower, shower facilities shall be provided in accordance with § 1910.141(d) (3).

(4) Contamination control. (i) Regulated areas, except for outdoor systems, shall be maintained under pressure negative with respect to nonregulated areas. Local exhaust ventilation may be used to satisfy this requirement. Clean makeup air in equal volume shall replace air removed.

(ii) Any equipment, material, or other item taken into or removed from a regulated area shall be done so in a manner that does not cause contamination in nonregulated areas or the external environment.

(iii) Decontamination procedures shall be established and implemented to remove methyl chloromethyl ether from the surfaces of materials, equipment and the decontamination facility.

(e) Signs, information and training.—(1) Signs. (i) Entrances to regulated areas shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT
AUTHORIZED PERSONNEL ONLY

(ii) Entrances to regulated areas containing operations covered in paragraph (c) (5) of this section shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT EXPOSED IN THIS AREA

IMPERVIOUS SUIT INCLUDING GLOVES, BOOTS, AND AIR-SUPPLIED HOOD REQUIRED AT ALL TIMES

AUTHORIZED PERSONNEL ONLY

(iii) Appropriate signs and instructions shall be posted at the entrance to, and exit from, regulated areas, informing employees of the procedures that must be followed in entering and leaving a regulated area.

(2) Container contents identification. (i) Containers of methyl chloromethyl ether and containers required under paragraphs (c) (4) (v) and (c) (6) (vii) (b), and (c) (6) (viii) (b) of this section which are accessible only to, and handled only by, authorized employees, or by other employees trained in accordance with subparagraph (5) of this paragraph, may have contents identification limited to a generic or proprietary name, or other proprietary identification, of the carcinogen and percent.

(ii) Containers of methyl chloromethyl ether and containers required under paragraphs (c) (4) (v), (c) (6) (vii) (b), and (c) (6) (viii) (b) of this section which are accessible to, or handled by, employees other than authorized employees or employees trained in accordance with subparagraph (5) of this paragraph shall have contents identification which includes the full chemical name and Chemical Abstracts Service Registry number as listed in paragraph (a) (1) of this section.

(iii) Containers shall have the warning words "CANCER-SUSPECT AGENT" displayed immediately under or adjacent to the contents identification.

(iv) Containers which have methyl chloromethyl ether contents with corrosive or irritating properties shall have label statements warning of such hazards, noting, if appropriate, particularly sensitive or affected portions of the body.

(3) Lettering. Lettering on signs and instructions required by subparagraph (1) of this paragraph shall be a minimum letter height of 2 inches. Labels on containers required under this section shall not be less than 1/2 the size of the largest lettering on the package, and not less than 8 point type in any instance: Provided, That no such required lettering need be more than 1 inch in height.

(4) Prohibited statements. No statement shall appear on or near any required sign, label, or instruction which contradicts or detracts from the effect of any required warning, information or instruction.

(5) Training and indoctrination. (i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to: (a) The nature of the carcinogenic hazards of methyl chloromethyl ether, including local and systemic toxicity;

(b) The specific nature of the operation involving methyl chloromethyl ether which could result in exposure;

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(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of methyl chloromethyl ether;

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

(iii) All materials relating to the program shall be provided upon request to authorized representatives of the Assistant Secretary and the Director.

(f) **Reports.**—(1) **Operations.** Not later than March 1, 1974, the information required in subdivisions (i), (ii), (iii), and (iv) of this subparagraph shall be reported in writing to the nearest OSHA Area Director. Any changes in such information shall be similarly reported in writing within 15 calendar days of such change. (i) A brief description and in-plant location of the area(s) regulated and the address of each regulated area;

(ii) The name(s) and other identifying information as to the presence of methyl chloromethyl ether in each regulated area;

(iii) The number of employees in each regulated area, during normal operations including maintenance activities; and

(iv) The manner in which methyl chloromethyl ether is present in each regulated area; e.g. whether it is manufactured, processed, used, repackaged, released, stored, or otherwise handled.

(2) **Incidents.** Incidents which result in the release of methyl chloromethyl ether into any area where employees may be potentially exposed shall be reported in accordance with this subparagraph.

(i) A report of the occurrence of the incident and the facts obtainable at that time including a report on any medical treatment of affected employees shall be made within 24 hours to the nearest OSHA Area Director.

(ii) A written report shall be filed with the nearest OSHA Area Director within 15 calendar days thereafter and shall include: (a) A specification of the amount of material released, the amount of time involved, and an explanation of the procedure used in determining this figure;

(b) A description of the area involved, and the extent of known and possible employee exposure and area contamination; and

(c) A report of any medical treatment of affected employees, and any medical surveillance program implemented; and

(d) An analysis of the circumstances be taken, with specific completion dates, of the incident, and measures taken or to be taken to avoid further similar releases.

(g) **Medical surveillance.** At no cost to the employee, a program of medical surveillance shall be established and implemented for employees considered for assignment to enter regulated areas, and for authorized employees. (1) **Examinations.** (i) Before an employee is assigned to enter a regulated area, a preassignment physical examination by a physician shall be provided. The examination shall include the personal history of the employee, family and occupational background, including genetic and environmental factors.

(ii) Authorized employees shall be provided periodic physical examinations, not less often than annually, following the preassignment examination.

(iii) In all physical examinations, the examining physician shall consider whether there exist conditions of increased risk, including reduced immunological competence, those undergoing treatment with steroids or cytotoxic agents, pregnancy and cigarette smoking.

(2) **Records.** (i) Employers of employees examined pursuant to this paragraph shall cause to be maintained complete and accurate records of all such medical examinations. Records shall be maintained for the duration of the employee's employment. Upon termination of the employee's employment, including retirement or death, or in the event that the employer ceases business without a successor, records, or notarized true copies thereof, shall be forwarded by registered mail to the Director.

(ii) Records required by this paragraph shall be provided upon request to authorized representatives of the Assistant Secretary or the Director; and upon request of an employee or former employee, to a physician designated by the employee or to a new employer.

(iii) Any physician who conducts a medical examination required by this paragraph shall furnish to the employer a statement of the employee's suitability for employment in the specific exposure.

§ 1910.93. 3,3'-Dichlorobenzidine (and its salts).

(a) **Scope and application.** (1) This section applies to any area in which 3,3'-Dichlorobenzidine (or its salts), Chemical Abstracts Service Registry Number 91941 is manufactured, processed, repackaged, released, handled, or stored, but shall not apply to trans-shipment in sealed containers except for the labeling requirements under paragraphs (e) (2), (3), and (4) of this section.

(2) This section shall not apply to solid or liquid mixtures containing less than 1 percent by weight or volume of 3,3'-Dichlorobenzidine (or its salts).

(b) **Definitions.** For the purposes of this section: (1) "Absolute filter" is one capable of retaining 99.97 percent of a mono disperse aerosol of 0.3 μ m particles.

(2) "Authorized employee" means an employee whose duties require him to be in the regulated area and who has been specifically assigned by the employer.

(3) "Clean change room" means a room where employees put on clean clothing and/or protective equipment in an environment free of 3,3'-Dichlorobenzidine (or its salts). The clean change room shall be contiguous to and have an entry from a shower room, when the shower room facilities are otherwise required in this section.

(4) "Closed system" means an operation involving 3,3'-Dichlorobenzidine (or its salts) where containment prevents the release of 3,3'-Dichlorobenzidine (or its salts) into regulated areas, nonregulated areas, or the external environment.

(5) "Decontamination" means the inactivation of 3,3'-Dichlorobenzidine or its safe disposal.

(6) "Director" means the Director, National Institute for Occupational Safety and Health, or any person directed by him or the Secretary of Health, Education, and Welfare to act for the Director.

(7) "Disposal" means the safe removal of 3,3'-Dichlorobenzidine (or its salts) from the work environment.

(8) "Emergency" means an unforeseen circumstance or set of circumstances resulting in the release of 3,3'-Dichlorobenzidine (or its salts) which may result in exposure to or contact with 3,3'-Dichlorobenzidine (or its salts).

(9) "External environment" means any environment external to regulated and nonregulated areas.

(10) "Isolated system" means a fully enclosed structure other than the vessel of containment, of 3,3'-Dichlorobenzidine (or its salts), which is impervious to the passage of 3,3'-Dichlorobenzidine (or its salts) and which would prevent the entry of 3,3'-Dichlorobenzidine (or its salts) into regulated areas, nonregulated areas, or the external environment, should leakage or spillage from the vessel of containment occur.

(11) "Laboratory type hood" is a device enclosed on three sides and the top and bottom, designed and maintained so as to draw air inward at an average linear face velocity of 150 feet per minute with a minimum of 125 feet per minute; designed, constructed, and maintained in such a way that an operation involving 3,3'-Dichlorobenzidine (or its salts) within the hood does not require the insertion of any portion of any employee's body other than his hands and arms.

(12) "Nonregulated area" means any area under the control of the employer where entry and exit is neither restricted nor controlled.

(13) "Open-vessel system" means an operation involving 3,3'-Dichlorobenzidine (or its salts) in an open vessel, which is not in an isolated system, a laboratory type hood, nor in any other system affording equivalent protection against the entry of 3,3'-Dichlorobenzidine (or its salts) into regulated areas, nonregulated areas, or the external environment.

(14) "Protective clothing" means clothing designed to protect an employee

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on contact with or exposure to 3,3'-Dichlorobenzidine (or its salts). "Regulated area" means an area where entry and exit is restricted and controlled.

Requirements for areas containing 3,3'-Dichlorobenzidine (or its salts). A regulated area shall be established by the employer where 3,3'-Dichlorobenzidine (or its salts) is manufactured, processed, repackaged, released, handled, stored. All such areas shall be established in accordance with the requirements for the following categories describing the operation: (i) Isolated systems. Employees working with 3,3'-Dichlorobenzidine (or its salts) within an isolated system, such as a "glove box" shall wash their hands and arms upon completion of the task and before engaging in activities not associated with the task.

Closed system operation. Within regulated areas where 3,3'-Dichlorobenzidine (or its salts) is stored in sealed containers, or contained in a closed system including piping systems, with any ports or openings closed while 3,3'-Dichlorobenzidine (or its salts) is used within: (i) Access shall be restricted to authorized employees only; (ii) Employees shall be required to wash hands, forearms, face and neck at each exit from the regulated areas, to the point of exit and before engaging in other activities.

Open vessel system operations. Open vessel system operations as defined in paragraph (b) (13) of this section are prohibited.

Transfer from a closed system, during or discharging point operations, or otherwise opening a closed system. In operations involving "laboratory type hoods" or in locations where 3,3'-Dichlorobenzidine (or its salts) is contained in an otherwise "closed system," if it is transferred, charged, or discharged into other normally closed containers, the provisions of this subparagraph shall apply. (i) Access shall be restricted to authorized employees only; (ii) Each operation shall be provided with continuous local exhaust ventilation so that air movement is always from work areas to the operation. Exhaust air shall not be discharged to labeled areas, nonregulated areas or external environment unless decontaminated. Clean makeup air shall be introduced in sufficient volume to maintain the correct operation of the local exhaust system.

(iii) Employees shall be provided with, and required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), shoe covers and gloves prior to entering the regulated area.

(iv) Employees engaged in 3,3'-Dichlorobenzidine (or its salts) handling operations shall be provided with and required to wear and use a half-face, negative pressure respirator for dusts, mists, fumes, in accordance with § 1910.134. A respirator affording higher levels of protection may be substituted.

(v) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified, as required under paragraphs (c) (2), (3), and (4) of this section.

(vi) Employees shall be required to wash hands, forearms, face and neck on each exit from the regulated area, close to the point of exit, and before engaging in other activities.

(vii) Employees shall be required to shower after the last exit of the day.

(viii) Drinking fountains are prohibited in the regulated area.

(5) **Maintenance and decontamination activities.** In cleanup of leaks or spills, maintenance or repair operations on contaminated systems or equipment, or any operations involving work in an area where direct contact with 3,3'-Dichlorobenzidine (or its salts) could result, each authorized employee entering that area shall: (i) Be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood in accordance with § 1910.134.

(ii) Be decontaminated before removing the protective garments and hood;

(iii) Be required to shower upon removing the protective garments and hood.

(6) **Laboratory activities.** The requirements of this subparagraph shall apply to research and quality control activities involving the use of 3,3'-Dichlorobenzidine (or its salts). (i) Mechanical pipetting aids shall be used for all pipetting procedures.

(ii) Experiments, procedures and equipment which could produce aerosols shall be confined to laboratory-type hoods or glove boxes.

(iii) Surfaces on which 3,3'-Dichlorobenzidine (or its salts) is handled shall be protected from contamination.

(iv) Contaminated wastes and animal carcasses shall be collected in impervious containers which are closed and decontaminated prior to removal from the work area. Such wastes and carcasses shall be incinerated in such a manner that no carcinogenic products are released.

(v) All other forms of 3,3'-Dichlorobenzidine (or its salts) shall be inactivated prior to disposal.

(vi) Laboratory vacuum systems shall be protected with high-efficiency scrubbers or with disposable absolute filters.

(vii) Employees engaged in animal support activities shall be (a) provided with, and required to wear, a complete protective clothing change, clean each day, including coveralls or pants and shirt, foot covers, head covers, gloves, and appropriate respiratory protective equipment or devices; and

(b) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and

equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified as required under paragraphs (c) (2), (3), and (4) of this section.

(c) Required to wash hands, forearms, face and neck upon each exit from the regulated area close to the point of exit, and before engaging in other activities; and

(d) Required to shower after the last exit of the day.

(viii) Employees, other than those engaged only in animal support activities, each day shall be (a) provided with and required to wear a clean change of appropriate laboratory clothing, such as a solid front gown, surgical scrub suit, or fully buttoned laboratory coat.

(b) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified as required under paragraphs (c) (2), (3), and (4) of this section.

(c) Required to wash hands, forearms, face and neck upon each exit from the regulated area close to the point of exit, and before engaging in other activities.

(ix) Air pressure in laboratory areas and animal rooms where 3,3'-Dichlorobenzidine (or its salts) is handled and bioassay studies are performed shall be negative in relation to the pressure in surrounding areas. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated.

(x) There shall be no connection between regulated areas and any other areas through the ventilation system.

(xi) A current inventory of 3,3'-Dichlorobenzidine (or its salts) shall be maintained.

(xii) Ventilated apparatus such as laboratory type hoods, shall be tested at least semi-annually or immediately after ventilation modification or maintenance operations, by personnel fully qualified to certify correct containment and operation.

(d) **General regulated area requirements—(1) Employee identification.** A daily roster of employees entering regulated areas shall be established and maintained. The rosters or a summary of the rosters, shall be retained for a period of 20 years. The rosters and/or summaries shall be provided upon request to authorized representatives of the Assistant Secretary and the Director. In the event that the employer ceases business without a successor, rosters shall be forwarded by registered mail to the Director.

(2) **Emergencies.** In an emergency, immediate measures including, but not limited to, the requirements of subdivisions (i), (ii), (iii), (iv), and (v) of this

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subparagraph shall be implemented. (i) The potentially affected area shall be evacuated as soon as the emergency has been determined.

(ii) Hazardous conditions created by the emergency shall be eliminated and the potentially affected area shall be decontaminated prior to the resumption of normal operations.

(iii) Special medical surveillance by a physician shall be instituted within 24 hours for employees present in the potentially affected area at the time of the emergency. A report of the medical surveillance and any treatment shall be included in the incident report, in accordance with paragraph (f)(2) of this section.

(iv) Where an employee has a known contact with 3,3'-Dichlorobenzidine (or its salts), such employee shall be required to shower as soon as possible, unless contraindicated by physical injuries.

(v) An incident report on the emergency shall be reported as provided in paragraph (f)(2) of this section.

(3) *Hygiene facilities and practices.* (i) Storage or consumption of food, storage or use of containers of beverages, storage or application of cosmetics, smoking, storage of smoking materials, tobacco products or other products for chewing, or the chewing of such products, are prohibited in regulated areas.

(ii) Where employees are required by this section to wash, washing facilities shall be provided in accordance with § 1910.141(d)(1) and (2)(ii) through (vii).

(iii) Where employees are required by this section to shower, shower facilities shall be provided in accordance with § 1910.141(d)(3).

(iv) Where employees wear protective clothing and equipment clean change rooms shall be provided, in accordance with § 1910.141(e), for the number of such employees required to change clothes.

(v) Where toilets are in regulated areas, such toilets shall be in a separate room.

(4) *Contamination control.* (i) Regulated areas, except for outdoor systems, shall be maintained under pressure negative with respect to nonregulated areas. Local exhaust ventilation may be used to satisfy this requirement. Clean make-up air in equal volume shall replace air removed.

(ii) Any equipment, material, or other item taken into or removed from a regulated area shall be done so in a manner that does not cause contamination in nonregulated areas or the external environment.

(iii) Decontamination procedures shall be established and implemented to remove 3,3'-Dichlorobenzidine (or its salts) from the surfaces of materials, equipment and the decontamination facility.

(iv) Dry sweeping and dry mopping are prohibited.

(e) *Signs, information and training.*

(1) *Signs.* (i) Entrances to regulated areas shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT

AUTHORIZED PERSONNEL ONLY

(ii) Entrances to regulated areas containing operations covered in paragraph (c)(5) of this section shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT EXPOSED IN THIS AREA

IMPERVIOUS SUIT INCLUDING GLOVES, BOOTS, AND AIR-SUPPLIED HOOD REQUIRED AT ALL TIMES

AUTHORIZED PERSONNEL ONLY

(iii) Appropriate signs and instructions shall be posted at the entrance to, and exit from, regulated areas, informing employees of the procedures that must be followed in entering and leaving a regulated area.

(2) *Container contents identification.*

(i) Containers of 3,3'-Dichlorobenzidine (or its salts) and containers required under paragraphs (c)(4)(v) and (c)(6)(vii)(b), and (c)(6)(viii)(b) of this section which are accessible only to, and handled only by, authorized employees, or by other employees trained in accordance with subparagraph (5) of this paragraph, may have contents identification limited to a generic or proprietary name, or other proprietary identification, of the carcinogen and percent.

(ii) Containers of 3,3'-Dichlorobenzidine (or its salts) and containers required under paragraphs (c)(4)(v), (c)(6)(vii)(b), and (c)(6)(viii)(b) of this section which are accessible to, or handled by, employees other than authorized employees or employees trained in accordance with subparagraph (5) of this paragraph shall have contents identification which includes the full chemical name and Chemical Abstracts Service Registry number as listed in paragraph (a)(1) of this section.

(iii) Containers shall have the warning words "CANCER-SUSPECT AGENT" displayed immediately under or adjacent to the contents identification.

(iv) Containers which have 3,3'-Dichlorobenzidine (or its salts) contents with corrosive or irritating properties shall have label statements warning of such hazards, noting, if appropriate, particularly sensitive or affected portions of the body.

(3) *Lettering.* Lettering on signs and instructions required by subparagraph (1) of this paragraph shall be a minimum letter height of 2 inches. Labels on containers required under this section shall not be less than 1/2 the size of the largest lettering on the package, and not less than 8 point type in any instance. *Provided*, That no such required lettering need be more than 1 inch in height.

(4) *Prohibited statements.* No statement shall appear on or near any required sign, label, or instruction which contradicts or detracts from the effect of any required warning, information or instruction.

(5) *Training and indoctrination.* (i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program

including, but not necessarily limited to: (a) The nature of the carcinogenic hazards of 3,3'-Dichlorobenzidine (or its salts), including local and systemic toxicity;

(b) The specific nature of the operation involving 3,3'-Dichlorobenzidine (or its salts) which could result in exposure; (c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of 3,3'-Dichlorobenzidine (or its salts);

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

(iii) All materials relating to the program shall be provided upon request to authorized representatives of the Assistant Secretary and the Director.

(f) *Reports.* (1) *Operations.* Not later than March 1, 1974, the information required in subdivisions (i), (ii), (iii), and (iv) of this subparagraph shall be reported in writing to the nearest OSHA Area Director. Any changes in such information shall be similarly reported in writing within 15 calendar days of such change. (i) A brief description and in-plant location of the area(s) regulated and the address of each regulated area;

(ii) The name(s) and other identifying information as to the presence of 3,3'-Dichlorobenzidine (or its salts) in each regulated area;

(iii) The number of employees in each regulated area, during normal operations including maintenance activities; and

(iv) The manner in which 3,3'-Dichlorobenzidine (or its salts) is present in each regulated area; e.g. whether it is manufactured, processed, used, repackaged, released, stored, or otherwise handled.

(2) *Incidents.* Incidents which result in the release of 3,3'-Dichlorobenzidine (or its salts) into any area where employees may be potentially exposed shall be reported in accordance with this subparagraph. (i) A report of the occurrence of the incident and the facts obtainable at that time including a report on any medical treatment of affected employees shall be made within 24 hours to the nearest OSHA Area Director.

(ii) A written report shall be filed with the nearest OSHA Area Director within 15 calendar days thereafter and shall include: (a) A specification of the

unt of material released, the amount involved, and an explanation of procedure used in determining this re:

- (b) A description of the area involved, the extent of known and possible employee exposure and area contamination, and
 - (c) A report of any medical treatment of affected employees, and any medical surveillance program implemented; and
 - (d) An analysis of the circumstances of the incident, and measures taken or to be taken, with specific completion dates, to avoid further similar releases.
- (g) *Medical surveillance.* At no cost to be employee, a program of medical surveillance shall be established and implemented for employees considered for assignment to enter regulated areas, and for authorized employees.

(1) *Examinations.* (i) Before an employee is assigned to enter a regulated area, a preassignment physical examination by a physician shall be provided. The examination shall include the personal history of the employee, family and occupational background, including genetic and environmental factors.

(ii) Authorized employees shall be provided periodic physical examinations, not less often than annually, following the preassignment examination.

(iii) In all physical examinations, the examining physician shall consider whether there exist conditions of increased risk, including reduced immunological competence, those undergoing treatment with steroids of cytotoxic agents, pregnancy and cigarette smoking.

(2) *Records.* (i) Employers of employees examined pursuant to this paragraph shall cause to be maintained complete and accurate records of all such medical examinations. Records shall be maintained for the duration of the employee's employment. Upon termination of the employee's employment, including retirement or death, or in the event that the employer ceases business without a successor, records, or notarized true copies thereof, shall be forwarded by registered mail to the Director.

(ii) Records required by this paragraph shall be provided upon request to authorized representatives of the Assistant Secretary or the Director; and upon request of an employee or former employee, to a physician designated by the employee or to a new employer.

(iii) Any physician who conducts a medical examination required by this paragraph shall furnish to the employer a statement of the employee's suitability for employment in the specific exposure.

§ 1910.93h bis-Chloromethyl ether.

(a) *Scope and application.* (1) This section applies to any area in which bis-chloromethyl ether, Chemical Abstracts Service Registry Number 542831 is manufactured, processed, repackaged, released, handled, or stored, but shall not apply to trans-shipment in sealed containers, except for the labeling requirements under

paragraphs (b)(2), (3), and (4) of this section.

(2) This section shall not apply to solid or liquid mixtures containing less than 0.1 percent by weight or volume of bis-chloromethyl ether.

(b) *Definitions.* For the purposes of this section: (1) "Absolute filter" is one capable of retaining 99.97 percent of a mono disperse aerosol of 0.3 μ m particles.

(2) "Authorized employee" means an employee whose duties require him to be in the regulated area and who has been specifically assigned by the employer.

(3) "Clean change room" means a room where employees put on clean clothing and/or protective equipment in an environment free of bis-chloromethyl ether. The clean change room shall be contiguous to and have an entry from a shower room, when the shower room facilities are otherwise required in this section.

(4) "Closed system" means an operation involving bis-chloromethyl ether where containment prevents the release of bis-chloromethyl ether into regulated areas, nonregulated areas, or the external environment.

(5) "Decontamination" means the inactivation of bis-chloromethyl ether or its safe disposal.

(6) "Director" means the Director, National Institute for Occupational Safety and Health, or any person directed by him or the Secretary of Health, Education, and Welfare to act for the Director.

(7) "Disposal" means the safe removal of bis-chloromethyl ether from the work environment.

(8) "Emergency" means an unforeseen circumstance or set of circumstances resulting in the release of bis-chloromethyl ether which may result in exposure to or contact with bis-chloromethyl ether.

(9) "External environment" means any environment external to regulated and nonregulated areas.

(10) "Isolated system" means a fully enclosed structure other than the vessel of containment, of bis-chloromethyl ether, which is impervious to the passage of, bis-chloromethyl ether and which would prevent the entry of bis-chloromethyl ether into regulated areas, nonregulated areas, or the external environment, should leakage or spillage from the vessel of containment occur.

(11) "Laboratory type hood" is a device enclosed on three sides and the top and bottom, designed and maintained so as to draw air inward at an average linear face velocity of 150 feet per minute with a minimum of 125 feet per minute; designed, constructed, and maintained in such a way that an operation involving bis-chloromethyl ether within the hood does not require the insertion of any portion of any employee's body other than his hands and arms.

(12) "Nonregulated area" means any area under the control of the employer where entry and exit is neither restricted nor controlled.

(13) "Open-vessel system" means an operation involving bis-chloromethyl

ether in an open vessel, which is not in an isolated system, a laboratory type hood, nor in any other system affording equivalent protection against the entry of bis-chloromethyl ether into regulated areas, nonregulated areas, or the external environment.

(14) "Protective clothing" means clothing designed to protect an employee against contact with or exposure to bis-chloromethyl ether.

(15) "Regulated area" means an area where entry and exit is restricted and controlled.

(c) *Requirements for areas containing bis-chloromethyl ether.* A regulated area shall be established by an employer where bis-chloromethyl ether is manufactured, processed, used, repackaged, released, handled or stored. All such areas shall be controlled in accordance with the requirements for the following category or categories describing the operation involved: (1) *Isolated systems.* Employees working with bis-chloromethyl ether within an isolated system, such as a "glove box" shall wash their hands and arms upon completion of the assigned task and before engaging in other activities not associated with the isolated system.

(2) *Closed system operation.* Within regulated areas where bis-chloromethyl ether is stored in sealed containers, or contained in a closed system, including piping systems, with any sample ports or openings closed while bis-chloromethyl ether is contained within. Access shall be restricted to authorized employees only.

(3) *Open vessel system operations.* Open vessel system operations as defined in paragraph (b)(13) of this section are prohibited.

(4) *Transfer from a closed system, charging or discharging point operations, or otherwise opening a closed system.* In operations involving "laboratory type hoods," or in locations where bis-chloromethyl ether is contained in an otherwise "closed system," but is transferred, charged, or discharged into other normally closed containers, the provisions of this subparagraph shall apply. (i) Access shall be restricted to authorized employees only.

(ii) Each operation shall be provided with continuous local exhaust ventilation so that air movement is always from ordinary work areas to the operation. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated. Clean makeup air shall be introduced in sufficient volume to maintain the correct operation of the local exhaust system.

(iii) Employees shall be provided with, and required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), and gloves prior to entering the regulated area.

(iv) Employees engaged in bis-chloromethyl ether handling operations shall be provided with and required to wear and use a full-face, supplied air respirator, of the continuous flow or pressure-demand type, in accordance with § 1910.134.

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(v) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified as required under paragraphs (c) (2), (3), and (4) of this section.

(vi) Drinking fountains are prohibited in the regulated area.

(5) *Maintenance and decontamination activities.* In cleanup of leaks or spills, maintenance or repair operations on contaminated systems or equipment, or any operations involving work in an area where direct contact with bis-chloromethyl ether could result, each authorized employee entering that area shall: (i) Be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood in accordance with § 1910.134.

(ii) Be decontaminated before removing the protective garments and hood;

(iii) Be required to shower upon removing the protective garments and hood.

(6) *Laboratory activities.* The requirements of this subparagraph shall apply to research and quality control activities involving the use of bis-chloromethyl ether. (i) Mechanical pipetting aids shall be used for all pipetting procedures.

(ii) *Experiments, procedures, and equipment* which could produce aerosols shall be confined to laboratory-type hoods or glove boxes.

(iii) Surfaces on which bis-chloromethyl ether is handled shall be protected from contamination.

(iv) Contaminated wastes and animal carcasses shall be collected in impervious containers which are closed and decontaminated prior to removal from the work area. Such wastes and carcasses shall be incinerated in such a manner that no carcinogenic products are released.

(v) All other forms of bis-chloromethyl ether shall be inactivated prior to disposal.

(vi) Laboratory vacuum systems shall be protected with high-efficiency scrubbers.

(vii) Employees engaged in animal support activities shall be (a) provided with, and required to wear, a complete protective clothing change, clean each day, including coveralls or pants and shirt, foot covers, head covers, gloves, and appropriate respiratory protective equipment or devices; and

(b) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified as required under paragraphs (c) (2), (3), and (4) of this section.

(c) Required to shower after the last exit of the day.

(viii) Employees, other than those engaged only in animal support activities, each day shall be (a) provided with and required to wear a clean change of appropriate laboratory clothing, such as a solid front gown, surgical scrub suit, or fully buttoned laboratory coat.

(b) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified as required under paragraphs (c) (2), (3), and (4) of this section.

(c) Required to wash hands, forearms, face and neck upon each exit from the regulated area close to the point of exit, and before engaging in other activities.

(ix) Air pressure in laboratory areas and animal rooms where bis-chloromethyl ether is handled and bioassay studies are performed shall be negative in relation to the pressure in surrounding areas. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated.

(x) There shall be no connection between regulated areas and any other areas through the ventilation system.

(xi) A current inventory of bis-chloromethyl ether shall be maintained.

(xii) Ventilated apparatus such as laboratory type hoods, shall be tested at least semi-annually or immediately after ventilation modification or maintenance operations, by personnel fully qualified to certify correct containment and operation.

(d) *General regulated area requirements—(1) Employee identification.* A daily roster of employees entering regulated areas shall be established and maintained. The rosters or a summary of the rosters, shall be retained for a period of 20 years. The rosters and/or summaries shall be provided upon request to authorized representatives of the Assistant Secretary and the Director. In the event that the employer ceases business without a successor, rosters shall be forwarded by registered mail to the Director.

(2) *Emergencies.* In an emergency, immediate measures including, but not limited to, the requirements of subdivisions (i), (ii), (iii), (iv), and (v) of this subparagraph shall be implemented. (i) The potentially affected area shall be evacuated as soon as the emergency has been determined.

(ii) Hazardous conditions created by the emergency shall be eliminated and the potentially affected area shall be decontaminated prior to the resumption of normal operations.

(iii) Special medical surveillance by a physician shall be instituted within 24 hours for employees present in the potentially affected area at the time of the emergency. A report of the medical surveillance and any treatment shall be

included in the incident report, in accordance with paragraph (f) (2) of this section.

(iv) Where an employee has a known contact with bis-chloromethyl ether an employee shall be required to shower as soon as possible, unless contraindicated by physical injuries.

(v) An incident report on the emergency shall be reported, as provided, paragraph (f) (2) of this section.

(3) *Hygiene facilities and practices.* (i) Storage or consumption of food, storage or use of containers of beverages, storage or application of cosmetics, smoking, storage of smoking materials, tobacco products, or other products for chewing, or the chewing of such products, are prohibited in regulated areas.

(ii) Where employees wear protective clothing and equipment clean change rooms shall be provided, in accordance with § 1910.141(e), for the number of such employees required to change clothes.

(iii) Where toilets are in regulated areas, such toilets shall be in a separate room.

(iv) Where employees are required by this section to wash, washing facilities shall be provided in accordance with § 1910.141(d) (1) and (2) (ii) through (vii).

(v) Where employees are required by this section to shower, shower facilities shall be provided in accordance with § 1910.141(d) (5).

(4) *Contamination control.* (i) Regulated areas, except for outdoor systems, shall be maintained under pressure negative with respect to nonregulated areas. Local exhaust ventilation may be used to satisfy this requirement. Clean make air in equal volume shall replace air removed.

(ii) Any equipment, material, or other item taken into or removed from a regulated area shall be done so in a manner that does not cause contamination of nonregulated areas or the external environment.

(iii) Decontamination procedures shall be established and implemented to remove bis-chloromethyl ether from surfaces of materials, equipment and decontamination facility.

(e) *Signs, information and training.* (1) *Signs.* (i) Entrances to regulated areas shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT

AUTHORIZED PERSONNEL ONLY

(ii) Entrances to regulated areas containing operations covered in paragraph (c) (5) of this section shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT EXPOSED IN AREA

IMPERVIOUS SUIT INCLUDING GLOVES, BOOTS, AND AIR-SUPPLIED HOOD REQUIRED AT ALL TIMES

AUTHORIZED PERSONNEL ONLY

(iii) Appropriate signs and instructions shall be posted at the entrance and exit from regulated areas, informing employees of the procedures that must

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ed in entering and leaving a regulated area.

Container contents identification. Containers of bis-chloromethyl ether containers required under paragraphs (c) (4) (v) and (c) (6) (vii) (b), (c) (6) (viii) (b) of this section which accessible only to, and handled only by authorized employees, or by other employees trained in accordance with paragraph (5) of this paragraph, may have contents identification limited to a trade or proprietary name, or other proprietary identification, of the carcinogen and percent.

(i) Containers of bis-chloromethyl ether and containers required under paragraphs (c) (4) (v), (c) (6) (vii) (b), (c) (6) (viii) (b) of this section which accessible to, or handled by, employees other than authorized employees or employees trained in accordance with paragraph (5) of this paragraph shall have contents identification which includes the full chemical name and Chemical Abstracts Service Registry number listed in paragraph (a) (1) of this section.

(iii) Containers shall have the warning words "CANCER-SUSPECT AGENT" displayed immediately under or adjacent to the contents identification.

(iv) Containers which have bis-chloromethyl ether contents with corrosive or irritating properties shall have label statements warning of such hazards, etching of appropriate, particularly sensitive, protected portions of the body.

(3) **Lettering.** Lettering on signs and instructions required by subparagraph (1) of this paragraph shall be a minimum letter height of 2 inches. Labels on containers required under this section shall not be less than 1/2 the size of the largest lettering on the package, and not less than 8 point type in any instance. *Provided*, That no such required lettering need be more than 1 inch in height.

(4) **Prohibited statements.** No statement shall appear on or near any required sign, label, or instruction which contradicts or detracts from the effect of any required warning, information or instruction.

(5) **Training and indoctrination.** (i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to: (a) The nature of the carcinogenic hazards of bis-chloromethyl ether, including local and systemic toxicity;

(b) The specific nature of the operation involving bis-chloromethyl ether which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures; The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may re-

sult in the release of bis-chloromethyl ether;

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

(iii) All materials relating to the program shall be provided upon request to authorized representatives of the Assistant Secretary and the Director.

(f) **Reports.** (1) **Operations.** Not later than March 1, 1974, the information required in subdivisions (i), (ii), (iii), and (iv) of this subparagraph shall be reported in writing to the nearest OSHA Area Director. Any changes in such information shall be similarly reported in writing within 15 calendar days of such change. (i) A brief description and in-plant location of the area(s) regulated and the address of each regulated area;

(ii) The name(s) and other identifying information as to the presence of bis-chloromethyl ether in each regulated area;

(iii) The number of employees in each regulated area, during normal operations including maintenance activities; and

(iv) The manner in which bis-chloromethyl ether is present in each regulated area; e.g. whether it is manufactured, processed, used, repackaged, released, stored, or otherwise handled.

(2) **Incidents.** Incidents which result in the release of bis-chloromethyl ether into any area where employees may be potentially exposed shall be reported in accordance with this subparagraph. (i) A report of the occurrence of the incident and the facts obtainable at that time including a report on any medical treatment of affected employees shall be made within 24 hours to the nearest OSHA Area Director.

(ii) A written report shall be filed with the nearest OSHA Area Director within 15 calendar days thereafter and shall include:

(a) A specification of the amount of material released, the amount of time involved, and an explanation of the procedure used in determining this figure;

(b) A description of the area involved, and the extent of known and possible employee exposure and area contamination; and

(c) A report of any medical treatment of affected employees, and any medical surveillance program implemented; and

(d) An analysis of the circumstances of the incident, and measures taken or to be taken, with specific completion dates, to avoid further similar releases.

(g) **Medical surveillance.** At no cost to the employee, a program of medical surveillance shall be established and implemented for employees considered for assignment to enter regulated areas, and for authorized employees. (1) **Examinations.** (i) Before an employee is assigned to enter a regulated area, a preassignment physical examination by a physi-

cian shall be provided. The examination shall include the personal history of the employee, family and occupational background, including genetic and environmental factors.

(ii) Authorized employees shall be provided periodic physical examinations, not less often than annually, following the preassignment examination.

(iii) In all physical examinations, the examining physician shall consider whether there exist conditions of increased risk, including reduced immunological competence, those undergoing treatment with steroids or cytotoxic agents, pregnancy and cigarette smoking.

(2) **Records.** (i) Employers of employees examined pursuant to this paragraph shall cause to be maintained complete and accurate records of all such medical examinations. Records shall be maintained for the duration of the employee's employment. Upon termination of the employee's employment, including retirement or death, or in the event that the employer ceases business without a successor, records, or notarized true copies thereof, shall be forwarded by registered mail to the Director.

(ii) Records required by this paragraph shall be provided upon request to authorized representatives of the Assistant Secretary or the Director; and upon request of an employee or to a new employer.

(iii) Any physician who conducts a medical examination required by this paragraph shall furnish to the employer a statement of the employee's suitability for employment in the specific exposure.

§ 1910.93i Beta-Naphthylamine

(a) **Scope and application.** (1) This section applies to any area in which beta-Naphthylamine, Chemical Abstracts Service Registry Number 91598 is manufactured, processed, repackaged, released, handled, or stored, but shall not apply to trans-shipment in sealed containers, except for the labeling requirements under paragraphs (e) (2), (3), and (4) of this section.

(2) This section shall not apply to solid or liquid mixtures containing less than 0.1 percent by weight or volume of beta-Naphthylamine.

(3) This section will not apply to operations involving the destructive distillation of carbonaceous materials, such as occurs in coke ovens.

(b) **Definitions.** For the purposes of this section: (1) "Absolute filter" is one capable of retaining 99.97 percent of a mono disperse aerosol of 0.3 μ m particles.

(2) "Authorized employee" means an employee whose duties require him to be in the regulated area and who has been specifically assigned by the employer.

(3) "Clean change room" means a room where employees put on clean clothing and/or protective equipment in an environment free of beta-Naphthylamine. The clean change room shall be contiguous to and have an entry from a shower room, when the shower room facilities are otherwise required in this section.

(4) "Closed system" means an operation involving beta-Naphthylamine

where containment prevents the release of beta-Naphthylamine into regulated areas, nonregulated areas, or the external environment.

(5) "Decontamination" means the inactivation of beta-Naphthylamine or its safe disposal.

(6) "Director" means the Director, National Institute for Occupational Safety and Health, or any person directed by him or the Secretary of Health, Education, and Welfare to act for the Director.

(7) "Disposal" means the safe removal of beta-Naphthylamine from the work environment.

(8) "Emergency" means an unforeseen circumstance or set of circumstances resulting in the release of beta-Naphthylamine which may result in exposure to or contact with beta-Naphthylamine.

(9) "External environment" means any environment external to regulated and nonregulated areas.

(10) "Isolated system" means a fully enclosed structure other than the vessel of containment of beta-Naphthylamine, which is impervious to the passage of beta-Naphthylamine, and which would prevent the entry of beta-Naphthylamine into regulated areas, nonregulated areas, or the external environment, should leakage or spillage from the vessel of containment occur.

(11) "Laboratory type hood" is a device enclosed on three sides and the top and bottom, designed and maintained so as to draw air inward at an average linear face velocity of 150 feet per minute with a minimum of 125 feet per minute; designed, constructed, and maintained in such a way that an operation involving beta-Naphthylamine within the hood does not require the insertion of any portion of any employee's body other than his hands and arms.

(12) "Nonregulated area" means any area under the control of the employer where entry and exit is neither restricted nor controlled.

(13) "Open-vessel system" means an operation involving beta-Naphthylamine in an open vessel, which is not in an isolated system, a laboratory type hood, nor in any other system affording equivalent protection against the entry of beta-Naphthylamine into regulated areas, nonregulated areas, or the external environment.

(14) "Protective clothing" means clothing designed to protect an employee against contact with or exposure to beta-Naphthylamine.

(15) "Regulated area" means an area where entry and exit is restricted and controlled.

(c) *Requirements for areas containing beta-Naphthylamine.* A regulated area shall be established by an employer where beta-Naphthylamine is manufactured, processed, used, repackaged, released, handled or stored. All such areas shall be controlled in accordance with the requirements for the following category or categories describing the operation involved: (1) *Isolated systems.* Employees working with beta-Naphthylamine within an isolated system, such as a "glove

box" shall wash their hands and arms upon completion of the assigned task and before engaging in other activities not associated with the isolated system.

(2) *Closed system operation.* Within regulated areas where beta-Naphthylamine is stored in sealed containers, or contained in a closed system, including piping systems, with any sample ports or openings closed while beta-Naphthylamine is contained within: (i) Access shall be restricted to authorized employees only;

(ii) Employees shall be required to wash hands, forearms, face and neck upon each exit from the regulated areas, close to the point of exit and before engaging in other activities.

(3) *Open vessel system operations.* Open vessel system operations as defined in paragraph (b) (13) of this section are prohibited.

(4) *Transfer from a closed system, charging or discharging point operations, or otherwise opening a closed system.* In operations involving "laboratory type hoods," or in locations where beta-Naphthylamine is contained in an otherwise "closed system," but is transferred, charged, or discharged into other normally closed containers, the provisions of this subparagraph shall apply: (i) Access shall be restricted to authorized employees only;

(ii) Each operation shall be provided with continuous local exhaust ventilation so that air movement is always from ordinary work areas to the operation. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated. Clean makeup air shall be introduced in sufficient volume to maintain the correct operation of the local exhaust system.

(iii) Employees shall be provided with, and required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), shoe covers and gloves prior to entering the regulated area.

(iv) Employees engaged in beta-Naphthylamine handling operations shall be provided with and required to wear and use a half-face, filter-type respirator for dusts, mists, and fumes, in accordance with § 1910.134. A respirator affording higher levels of protection may be substituted.

(v) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified, as required under paragraphs (e) (2), (3), and (4) of this section.

(vi) Employees shall be required to wash hands, forearms, face and neck on each exit from the regulated area, close to the point of exit, and before engaging in other activities.

(vii) Employees shall be required to shower after the last exit of the day.

(viii) Drinking fountains are provided in the regulated area.

(5) *Maintenance and decontamination activities.* In cleanup of leaks, spills, maintenance or repair operation on contaminated systems or equipment where direct contact with beta-Naphthylamine could result, each authorized employee entering that area shall be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supply hood in accordance with § 1910.134.

(ii) Be decontaminated before removing the protective garments and hood.

(iii) Be required to shower upon removing the protective garments and hood.

(6) *Laboratory activities.* The requirements of this subparagraph apply to research and quality control activities involving the use of Naphthylamine. (i) Mechanical testing aids shall be used for all pip procedures.

(ii) Experiments, procedures, equipment which could produce or shall be confined to laboratory hoods or glove boxes.

(iii) Surfaces on which beta-Naphthylamine is handled shall be protected from contamination.

(iv) Contaminated wastes and carcasses shall be collected in impervious containers which are closed and decontaminated prior to removal from the area. Such wastes and carcasses shall be incinerated in such a manner that carcinogenic products are released.

(v) All other forms of beta-Naphthylamine shall be inactivated prior to disposal.

(vi) Laboratory vacuum systems shall be protected with high-efficiency filters or with disposable absolute filters.

(vii) Employees engaged in a support activities shall be (a) provided with, and required to wear, a complete protective clothing change, clean dry, including coveralls or pants, shirt, foot covers, head covers, and appropriate respiratory protection equipment or devices; and

(b) Prior to each exit from a regulated area, employees shall be required to move and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified as required under paragraphs (e) (2), (3), and (4) of this section.

(c) Required to wash hands, face and neck upon each exit from regulated area close to the point of exit and before engaging in other activities.

(d) Required to shower after exit of the day.

(viii) Employees, other than engaged only in animal support activities each day shall be (a) provided with, and required to wear a clean change appropriate laboratory clothing, a solid front gown, surgical scrub fully buttoned laboratory coat.

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(v) Each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified as required under paragraphs (c) (2), (3), and (4) of this section.

(vi) Required to wash hands, forehead, face and neck upon each exit from the regulated area close to the point of exit, and before engaging in other activities.

(vii) Air pressure in laboratory areas and animal rooms where beta-Naphthylamine is handled and bioassay studies are performed shall be negative in relation to the pressure in surrounding areas. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated.

(viii) There shall be no connection between regulated areas and any other areas through the ventilation system.

(ix) A current inventory of beta-Naphthylamine shall be maintained.

(x) Ventilated apparatus such as laboratory type hoods, shall be tested at least semi-annually or immediately after ventilation modification or maintenance operations, by personnel fully qualified to verify correct containment and operation.

(b) **General regulated area requirements—**(1) **Employee identification.** A daily roster of employees entering regulated areas shall be established and maintained. The rosters or a summary of the rosters, shall be retained for a period of 20 years. The rosters and/or summaries shall be provided upon request to authorized representatives of the Assistant Secretary and the Director. In the event that the employer ceases business without a successor, rosters shall be forwarded by registered mail to the Director.

(2) **Emergencies.** In an emergency, immediate measures including, but not limited to, the requirements of subdivisions (i), (ii), (iii), (iv), and (v) of this subparagraph shall be implemented. (i) The potentially affected area shall be evacuated as soon as the emergency has been determined.

(ii) Hazardous conditions created by the emergency shall be eliminated and the potentially affected area shall be decontaminated prior to the resumption of normal operations.

(iii) Special medical surveillance by a physician shall be instituted within 24 hours for employees present in the potentially affected area at the time of the emergency. A report of the medical surveillance and any treatment shall be included in the incident report, in accordance with paragraph (f) (2) of this section.

(iv) Where an employee has a known contact with beta-Naphthylamine, such employee shall be required to shower as soon as possible, unless contraindicated by physical injuries.

(v) An incident report on the emergency shall be reported as provided in paragraph (f) (2) of this section.

(3) **Hygiene facilities and practices.**

(i) Storage or consumption of food, storage or use of containers of beverages, storage or application of cosmetics, smoking, storage of smoking materials, tobacco products or other products for chewing, or the chewing of such products, are prohibited in regulated areas.

(ii) Where employees are required by this section to wash, washing facilities shall be provided in accordance with § 1910.141(d) (1) and (2) (ii) through (vii).

(iii) Where employees are required by this section to shower, shower facilities shall be provided in accordance with § 1910.141(d) (3).

(iv) Where employees wear protective clothing and equipment clean change rooms shall be provided, in accordance with § 1910.141(c), for the number of such employees required to change clothes.

(v) Where toilets are in regulated areas, such toilets shall be in a separate room.

(4) **Contamination control.** (i) Regulated areas, except for outdoor systems, shall be maintained under pressure negative with respect to nonregulated areas. Local exhaust ventilation may be used to satisfy this requirement. Clean makeup air in equal volume shall replace air removed.

(ii) Any equipment, material, or other item taken into or removed from a regulated area shall be done so in a manner that does not cause contamination in nonregulated areas or the external environment.

(iii) Decontamination procedures shall be established and implemented to remove beta-Naphthylamine from the surfaces of materials, equipment and the decontamination facility.

(iv) Dry sweeping and dry mopping are prohibited.

(e) **Signs, information and training—**(1) **Signs.** (i) Entrances to regulated areas shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT

AUTHORIZED PERSONNEL ONLY

(ii) Entrances to regulated areas containing operations covered in paragraph (c) (5) of this section shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT EXPOSED IN THIS AREA

IMPERVIOUS SUIT INCLUDING GLOVES, BOOTS, AND AIR-SUPPLIED HOOD REQUIRED AT ALL TIMES

AUTHORIZED PERSONNEL ONLY

(iii) Appropriate signs and instructions shall be posted at the entrance to, and exit from, regulated areas, informing employees of the procedures that must be followed in entering and leaving a regulated area.

(2) **Container contents identification.** (i) Containers of beta-Naphthylamine and containers required under paragraphs (c) (4), and (c) (6) (vii) (b), and (c) (6) (viii) (b) of this section which are accessible only to, and handled only by, authorized employees, or by other employees trained in accordance with subparagraph (5) of this paragraph, may have contents identification limited to a generic or proprietary name, or other proprietary identification, of the carcinogen and percent.

(ii) Containers of beta-Naphthylamine and containers required under paragraphs (c) (4) (v), (c) (6) (vii) (b), and (c) (6) (viii) (b) of this section which are accessible to, or handled by employees other than authorized employees or employees trained in accordance with subparagraph (5) of this paragraph shall have contents identification which includes the full chemical name and Chemical Abstracts Service Registry number as listed in paragraph (a) (1) of this section.

(iii) Containers shall have the warning words "CANCER-SUSPECT AGENT" displayed immediately under or adjacent to the contents identification.

(iv) Containers which have beta-Naphthylamine contents with corrosive or irritating properties shall have label statements warning of such hazards, noting, if appropriate, particularly sensitive or affected portions of the body.

(3) **Lettering.** Lettering on signs and instructions required by subparagraph (1) shall be a minimum letter height of 2 inches. Labels on containers required under this section shall not be less than the size of the largest lettering on the package, and not less than 8 point type in any instance. *Provided*, That no such required lettering need be more than 1 inch in height.

(4) **Prohibited statements.** No statement shall appear on or near any required sign, label, or instruction which contradicts or detracts from the effect of any required warning, information or instruction.

(5) **Training and indoctrination.** (i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to: (a) The nature of the carcinogenic hazards of beta-Naphthylamine, including local and systemic toxicity;

(b) The specific nature of the operation involving beta-Naphthylamine which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of beta-Naphthylamine;

(h) The purpose for and application of specific first aid procedures and practices;

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(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

(iii) All materials relating to the program shall be provided upon request to authorized representatives of the Assistant Secretary and the Director.

(f) **Reports.**—(1) **Operations.** Not later than March 1, 1974, the information required in subdivisions (i), (ii), (iii), and (iv) of this subparagraph shall be reported in writing to the nearest OSHA Area Director. Any changes in such information shall be similarly reported in writing within 15 calendar days of such change. (i) A brief description and in-plant location of the area(s) regulated and the address of each regulated area;

(ii) The name(s) and other identifying information as to the presence of beta-Naphthylamine in each regulated area;

(iii) The number of employees in each regulated area, during normal operations including maintenance activities; and

(iv) The manner in which beta-Naphthylamine is present in each regulated area; e.g. whether it is manufactured, processed, used, repackaged, released, stored, or otherwise handled.

(2) **Incidents.** Incidents which result in the release of beta-Naphthylamine into any area where employees may be potentially exposed shall be reported in accordance with this subparagraph. (i) A report of the occurrence of the incident and the facts obtainable at that time including a report on any medical treatment of affected employees shall be made within 24 hours to the nearest OSHA Area Director.

(ii) A written report shall be filed with the nearest OSHA Area Director within 15 calendar days thereafter and shall include: (a) A specification of the amount of material released, the amount of time involved, and an explanation of the procedure used in determining this figure;

(b) A description of the area involved, and the extent of known and possible employee exposure and area contamination;

(c) A report of any medical treatment of affected employees, and any medical surveillance program implemented; and

(d) An analysis of the circumstances of the incident, and measures taken or to be taken, with specific completion dates, to avoid further similar releases.

(g) **Medical surveillance.** At no cost to the employee, a program of medical surveillance shall be established and implemented for employees considered for assignment to enter regulated areas, and for authorized employees. (1) **Examinations.** (i) Before an employee is assigned to enter a regulated area, a preassignment physical examination by a physician shall be provided. The examination shall include the personal history of the employee, family and occupational background, including genetic and environmental factors.

(ii) Authorized employees shall be provided periodic physical examinations, not less often than annually, following the preassignment examination.

(iii) In all physical examinations the examining physician shall consider whether there exist conditions of increased risk, including reduced immunological competence, those undergoing treatment with steroids or cytotoxic agents, pregnancy and cigarette smoking.

(2) **Records.** (i) Employers of employees examined pursuant to this paragraph shall cause to be maintained complete and accurate records of all such medical examinations. Records shall be maintained for the duration of the employee's employment. Upon termination of the employee's employment, including retirement or death, or in the event that the employer ceases business without a successor, records, or notarized true copies thereof, shall be forwarded by registered mail to the Director.

(ii) Records required by this paragraph shall be provided upon request to authorized representatives of the Assistant Secretary or the Director; and upon request of an employee or former employee, to a physician designated by the employee or to a new employer.

(iii) Any physician who conducts a medical examination required by this paragraph shall furnish to the employer a statement of the employee's suitability for employment in the specific exposure.

§ 1910.93: Benzidine.

(a) **Scope and application.** (1) This section applies to any area in which Benzidine, Chemical Abstracts Service Registry Number 92875 is manufactured, processed, repackaged, released, handled, or stored, but shall not apply to transshipment in sealed containers, except for the labeling requirements under paragraphs (e) (2), (3), and (4) of this section.

(2) This section shall not apply to solid or liquid mixtures containing less than 0.1 percent by weight or volume in Benzidine.

(b) **Definitions.** For the purposes of this section: (1) "Absolute filter" is one capable of retaining 99.97 percent of a mono disperse aerosol of 0.3 μ m particles.

(2) "Authorized employee" means an employee whose duties require him to be in the regulated area and who has been specifically assigned by the employer.

(3) "Clean change room" means a room where employees put on clean clothing and/or protective equipment in an environment free of Benzidine. The clean change room shall be contiguous to and have an entry from a shower room, when the shower room facilities are otherwise required in this section.

(4) "Closed system" means an operation involving Benzidine where containment prevents the release of Benzidine into regulated areas, nonregulated areas, or the external environment.

(5) "Decontamination" means the inactivation of Benzidine or its safe disposal.

(6) "Director" means the Director, National Institute for Occupational

Safety and Health, or any person directed by him or the Secretary of Health, Education, and Welfare to act for Director.

(7) "Disposal" means the safe removal of Benzidine from the work environment.

(8) "Emergency" means an unforeseen circumstance or set of circumstances resulting in the release of Benzidine which may result in exposure or contact with Benzidine.

(9) "External environment" means any environment external to regulated and nonregulated areas.

(10) "Isolated system" means a self-enclosed structure other than the vessel of containment of Benzidine, which is impervious to the passage of Benzidine and which would prevent the entry of Benzidine into regulated areas, nonregulated areas, or the external environment should leakage or spillage from the vessel of containment occur.

(11) "Laboratory type hood" is a device enclosed on three sides and the top and bottom, designed and maintained as to draw air inward at an average linear face velocity of 150 feet per minute with a minimum of 125 feet per minute, designed, constructed, and maintained such a way that an operation involving Benzidine within the hood does not require the insertion of any portion of employee's body other than his head and arms.

(12) "Nonregulated area" means an area under the control of the employer where entry and exit is neither restricted nor controlled.

(13) "Open-vessel system" means an operation involving Benzidine in an open vessel, which is not in an isolated system, a laboratory type hood, nor in any other system affording equivalent protection against the entry of Benzidine into regulated areas, nonregulated areas, or the external environment.

(14) "Protective clothing" means clothing designed to protect an employee against contact with or exposure to Benzidine.

(15) "Regulated area" means an area where entry and exit is restricted and controlled.

(c) **Requirements for areas containing Benzidine.** A regulated area shall be established by an employer where Benzidine is manufactured, processed, repackaged, released, handled or stored. All such areas shall be controlled in accordance with the requirements for the following category or categories designating the operation involved: (1) **Isolated systems.** Employees working with Benzidine within an isolated system, such as a "glove box" shall wash their hands and arms upon completion of the assigned task and before engaging in other activities not associated with the isolated system.

(2) **Closed system operation.** In regulated areas where Benzidine is stored in sealed containers, or contained in a closed system, including piping, systems, with any sample ports or fittings closed while Benzidine is contained within: (i) Access shall be restricted to authorized employees only;

(ii) Employees shall be required to wash hands, forearms, face and neck upon each exit from the regulated areas, close to the point of exit and before engaging in other activities.

(3) Open vessel system operations. Open vessel system operations as defined in paragraph (b) (13) of this section are prohibited.

(4) Transfer from a closed system. Loading or discharging point operations, or otherwise opening a closed system. In operations involving "laboratory type hoods," or in locations where Benzidine is contained in an otherwise "closed system," but is transferred, charged, or discharged into other normally closed containers, the provisions of this subparagraph shall apply. (i) Access shall be restricted to authorized employees only;

(ii) Each operation shall be provided with continuous local exhaust ventilation so that air movement is always from ordinary work areas to the operation. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated. Clean makeup air shall be introduced in sufficient volume to maintain the correct operation of the local exhaust system.

(iii) Employees shall be provided with; and required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), shoe covers and gloves prior to entering the regulated area.

(iv) Employees engaged in Benzidine handling operations shall be provided with and required to wear and use a half-face, filter-type respirator for dusts, mists, and fumes, in accordance with § 1910.134. A respirator affording higher levels of protection may be substituted.

(v) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified, as required under paragraphs (e) (2), (3), and (4) of this section.

(vi) Employees shall be required to wash hands, forearms, face and neck on each exit from the regulated area, close to the point of exit, and before engaging in other activities.

(vii) Employees shall be required to shower after the last exit of the day.

(viii) Drinking fountains are prohibited in the regulated area.

(5) Maintenance and decontamination activities. In cleanup of leaks or spills, maintenance or repair operations on contaminated systems or equipment, where direct contact with Benzidine could result, each authorized employee entering that area shall: (i) Be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood in accordance with § 1910.134.

(ii) Be decontaminated before removing the protective garments and hood;

(iii) Be required to shower upon removing the protective garments and hood.

(6) Laboratory activities. The requirements of this subparagraph shall apply to research and quality control activities involving the use of Benzidine. (i) Mechanical pipetting aids shall be used for all pipetting procedures.

(ii) Experiments, procedures and equipment which could produce aerosols shall be confined to laboratory-type hoods or glove boxes.

(iii) Surfaces on which Benzidine is handled shall be protected from contamination.

(iv) Contaminated wastes and animal carcasses shall be collected in impervious containers which are closed and decontaminated prior to removal from the work area. Such wastes and carcasses shall be incinerated in such a manner that no carcinogenic products are released.

(v) All other forms of Benzidine shall be inactivated prior to disposal.

(vi) Laboratory vacuum systems shall be protected with high-efficiency scrubbers or with disposable absolute filters.

(vii) Employees engaged in animal support activities shall be (a) provided with, and required to wear, a complete protective clothing change, clean each day, including coveralls or pants and shirt, foot covers, head covers, gloves, and appropriate respiratory protective equipment or devices; and

(b) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified as required under paragraphs (e) (2), (3), and (4) of this section.

(c) Required to wash hands, forearms, face and neck upon each exit from the regulated area close to the point of exit, and before engaging in other activities; and

(d) Required to shower after the last exit of the day.

(viii) Employees, other than those engaged only in animal support activities, each day shall be (a) provided with and required to wear a clean change of appropriate laboratory clothing, such as a solid front gown, surgical scrub suit, or fully buttoned laboratory coat.

(b) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified as required under paragraphs (e) (2), (3), and (4) of this section.

(c) Required to wash hands, forearms, face and neck upon each exit from the regulated area close to the point of

exit, and before engaging in other activities.

(ix) Air pressure in laboratory areas and animal rooms where Benzidine is handled and bioassay studies are performed shall be negative in relation to the pressure in surrounding areas. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated.

(x) There shall be no connection between regulated areas and any other areas through the ventilation system.

(xi) A current inventory of Benzidine shall be maintained.

(xii) Ventilated apparatus such as laboratory type hoods, shall be tested at least semi-annually or immediately after ventilation modification or maintenance operations, by personnel fully qualified to certify correct containment and operation.

(d) General regulated area requirements—(1) Employee identification. A daily roster of employees entering regulated areas shall be established and maintained. The rosters or a summary of the rosters, shall be retained for a period of 20 years. The rosters and/or summaries shall be provided upon request to authorized representatives of the Assistant Secretary and the Director. In the event that the employer ceases business without a successor, rosters shall be forwarded by registered mail to the Director.

(2) Emergencies. In an emergency, immediate measures including, but not limited to, the requirements of subdivisions (b) (iii), (iv), and (v) of this subparagraph shall be implemented. (i) The potentially affected area shall be evacuated as soon as the emergency has been determined.

(ii) Hazardous conditions created by the emergency shall be eliminated and the potentially affected area shall be decontaminated prior to the resumption of normal operations.

(iii) Special medical surveillance by a physician shall be instituted within 24 hours for employees present in the potentially affected area at the time of the emergency. A report of the medical surveillance and any treatment shall be included in the incident report, in accordance with paragraph (f) (2) of this section.

(iv) Where an employee has a known contact with Benzidine such employee shall be required to shower as soon as possible unless contraindicated by physical injuries.

(v) An incident report on the emergency shall be reported as provided in paragraph (f) (2) of this section.

(3) Hygiene facilities and practices. (i) Storage or consumption of food, storage or use of containers of beverages, storage or application of cosmetics, smoking, storage of smoking materials, tobacco products or other products for chewing, or the chewing of such products, are prohibited in regulated areas.

(ii) Where employees are required by this section to wash, washing facilities shall be provided in accordance with

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§ 1910.141(d) (1) and (2) (ii) through (vii).

(iii) Where employees are required by this section to shower, shower facilities shall be provided in accordance with § 1910.141(d) (3).

(iv) Where employees wear protective clothing and equipment clean change rooms shall be provided, in accordance with § 1910.141(e), for the number of such employees required to change clothes.

(v) Where toilets are in regulated areas, such toilets shall be in a separate room.

(4) **Contamination control.** (i) Regulated areas, except for outdoor systems, shall be maintained under pressure negative with respect to nonregulated areas. Local exhaust ventilation may be used to satisfy this requirement. Clean makeup air in equal volume shall replace air removed.

(ii) Any equipment, material, or other item taken into or removed from a regulated area shall be done so in a manner that does not cause contamination in nonregulated areas or the external environment.

(iii) Decontamination procedures shall be established and implemented to remove Benzidine from the surfaces of materials, equipment and the decontamination facility.

(iv) Dry sweeping and dry mopping are prohibited.

(e) **Signs, information and training.**

(1) **Signs.** (i) Entrances to regulated areas shall be posted with signs bearing the legend:

**CANCER-SUSPECT AGENT
AUTHORIZED PERSONNEL ONLY**

(ii) Entrances to regulated areas containing operations covered in paragraph (c) (5) of this section shall be posted with signs bearing the legend:

**CANCER-SUSPECT AGENT EXPOSED IN THIS
AREA**

**IMPERVIOUS SUIT INCLUDING GLOVES,
BOOTS, AND AIR-SUPPLIED HOOD RE-
QUIRED AT ALL TIMES**

AUTHORIZED PERSONNEL ONLY

(iii) Appropriate signs and instructions shall be posted at the entrance to, and exit from, regulated areas, informing employees of the procedures that must be followed in entering and leaving a regulated area.

(2) **Container contents identification.** (i) Containers of Benzidine and containers required under paragraphs (c) (4) (v) and (c) (6) (vii) (b), and (c) (6) (viii) (b) of this section which are accessible only to, and handled only by, authorized employees, or by other employees trained in accordance with subparagraph (5) of this paragraph, may have contents identification limited to a generic or proprietary name, or other proprietary identification, of the carcinogen and percent.

(ii) Containers of Benzidine and containers required under paragraphs (c) (4) (v), (c) (6) (vii) (b), and (c) (6) (viii) (b) of this section which are accessible to, or handled by employees other than authorized employees or employees

trained in accordance with subparagraph (5) of this paragraph shall have contents identification which includes the full chemical name and Chemical Abstracts Service Registry number as listed in paragraph (4) (1) of this section.

(iii) Containers shall have the warning words "CANCER-SUSPECT AGENT" displayed immediately under or adjacent to the contents identification.

(iv) Containers which have Benzidine contents with corrosive or irritating properties shall have label statements warning of such hazards, noting, if appropriate, particularly sensitive or affected portions of the body.

(3) **Lettering.** Lettering on signs and instructions required by subparagraph (1) of this paragraph shall be a minimum letter height of 2 inches. Labels on containers required under this section shall not be less than 1/2 the size of the largest lettering on the package, and not less than 8 point type in any instance: *Provided*, That no such required lettering need be more than 1 inch in height.

(4) **Prohibited statements.** No statement shall appear on or near any required sign, label, or instruction which contradicts or detracts from the effect of any required warning, information or instruction.

(5) **Training and indoctrination.** (i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to: (a) The nature of the carcinogenic hazards of Benzidine, including local and systemic toxicity;

(b) The specific nature of the operation involving Benzidine which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of Benzidine;

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

(iii) All materials relating to the program shall be provided upon request to authorized representatives of the Assistant Secretary and the Director.

(f) **Reports.**—(1) **Operations.** Not later than March 1, 1974, the information required in subdivisions (i), (ii), (iii), and (iv) of this subparagraph shall be reported in writing to the nearest OSHA Area Director. Any changes in such information shall be similarly reported in

writing within 15 calendar days of such change. (i) A brief description and plant location of the area(s) regulated and the address of each regulated area.

(ii) The name(s) and other identifying information as to the presence of Benzidine in each regulated area;

(iii) The number of employees each regulated area, during normal operations including maintenance activities; and

(iv) The manner in which Benzidine is present in each regulated area; whether it is manufactured, processed, used, repackaged, released, stored, otherwise handled.

(2) **Incidents.** Incidents which result in the release of Benzidine into any area where employees may be potentially exposed shall be reported in accordance with this subparagraph. (i) A report of the occurrence of the incident and facts obtainable at that time including report on any medical treatment affected employees shall be made within 24 hours to the nearest OSHA Area Director.

(ii) A written report shall be filed with the nearest OSHA Area Director within 15 calendar days thereafter and shall include: (a) A specification of amount of material released, the amount of time involved, and an explanation of the procedure used in determining the figure;

(b) A description of the area involved and the extent of known and possible employee exposure and area contamination; and

(c) A report of any medical treatment of affected employees, and any medical surveillance program implemented;

(d) An analysis of the circumstances of the incident, and measures taken to be taken, with specific completion dates, to avoid further similar releases;

(g) **Medical surveillance.** At no time to the employee, a program of medical surveillance shall be established and implemented for employees considered assignment to enter regulated areas, for authorized employees. (i) **Examinations.** (i) Before an employee is assigned to enter a regulated area, a preassignment physical examination by a physician shall be provided. The examination shall include the personal history of employee, family and occupational background, including genetic and environmental factors.

(ii) Authorized employees shall be provided periodic physical examinations not less often than annually, following the preassignment examination.

(iii) In all physical examination examining physician shall consider whether there exist conditions of increased risk, including reduced immunological competence, those under treatment with steroids or cytotoxic agents, pregnancy and cigarette smoking.

(2) **Records.** (i) Employers of employees examined pursuant to this paragraph shall cause to be maintained complete and accurate records of all medical examinations. Records shall be maintained for the duration of employee's employment. Upon termination

of the employee's employment, including retirement or death, or in the event that the employer ceases business without a successor, records, or notarized true copies thereof, shall be forwarded by registered mail to the Director.

(ii) Records required by this paragraph shall be provided upon request to authorized representatives of the Assistant Secretary or the Director; and upon request of an employee or former employee, to a physician designated by the employee or to a new employer.

(iii) Any physician who conducts a medical examination required by this paragraph shall furnish to the employer a statement of the employee's suitability for employment in the specific exposure.

§ 1910.93k 4-Aminodiphenyl.

(a) *Scope and application.* (1) This section applies to any area in which 4-Aminodiphenyl, Chemical Abstracts Service Registry Number 92671 is manufactured, processed, repackaged, released, handled, or stored, but shall not apply to trans-shipment in sealed containers, except for the labeling requirements under paragraphs (c) (2), (3), and (4) of this section.

(2) This section shall not apply to solid or liquid mixtures containing less than 0.1 percent by weight or volume of 4-Aminodiphenyl.

(b) *Definitions.* For the purposes of this section: (1) "Absolute filter" is one capable of retaining 99.97 percent of a 0.3-micron aerosol of 0.2-micron particles.

(2) "Authorized employee" means an employee whose duties require him to be in the regulated area and who has been specifically assigned by the employer.

(3) "Clean change room" means a room where employees put on clean clothing and/or protective equipment in an environment free of 4-Aminodiphenyl. The clean change room shall be contiguous to and have an entry from a shower room, when the shower room facilities are otherwise required in this section.

(4) "Closed system" means an operation involving 4-Aminodiphenyl where containment prevents the release of 4-Aminodiphenyl into regulated areas, nonregulated areas, or the external environment.

(5) "Decontamination" means the inactivation of 4-Aminodiphenyl or its safe disposal.

(6) "Director" means the Director, National Institute for Occupational Safety and Health, or any person directed by him or the Secretary of Health, Education, and Welfare to act for the Director.

(7) "Disposal" means the safe removal of 4-Aminodiphenyl from the work environment.

(8) "Emergency" means an unforeseen circumstance or set of circumstances resulting in the release of 4-Aminodiphenyl which may result in exposure to or contact with 4-Aminodiphenyl.

(9) "External environment" means any environment external to regulated and nonregulated areas.

(10) "Isolated system" means a fully enclosed structure other than the vessel of containment of 4-Aminodiphenyl, which is impervious to the passage of 4-Aminodiphenyl, and which would prevent the entry of 4-Aminodiphenyl into regulated areas, nonregulated areas, or the external environment, should leakage or spillage from the vessel of containment occur.

(11) "Laboratory type hood" is a device enclosed on three sides and the top and bottom, designed and maintained so as to draw air inward at an average linear face velocity of 150 feet per minute with a minimum of 175 feet per minute; designed, constructed, and maintained in such a way that an operation involving 4-Aminodiphenyl within the hood does not require the insertion of any portion of any employee's body other than his hands and arms.

(12) "Nonregulated area" means any area under the control of the employer where entry and exit is neither restricted nor controlled.

(13) "Open-vessel system" means an operation involving 4-Aminodiphenyl in an open vessel, which is not in an isolated system, a laboratory type hood, nor in any other system affording equivalent protection against the entry of 4-Aminodiphenyl into regulated areas, nonregulated areas, or the external environment.

(14) "Protective clothing" means clothing designed to protect an employee against contact with or exposure to 4-Aminodiphenyl.

(15) "Regulated area" means an area where entry and exit is restricted and controlled.

(c) *Requirements for areas containing 4-Aminodiphenyl.* A regulated area shall be established by an employer where 4-Aminodiphenyl is manufactured, processed, used, repackaged, released, handled or stored. All such areas shall be controlled in accordance with the requirements for the following category or categories describing the operation involved: (1) *Isolated systems.* Employees working with 4-Aminodiphenyl within an isolated system, such as a "glove box" shall wash their hands and arms upon completion of the assigned task and before engaging in other activities not associated with the isolated system.

(2) *Closed system operation.* Within regulated areas where 4-Aminodiphenyl is stored in sealed containers, or contained in a closed system, including piping systems, with any sample ports or openings closed while 4-Aminodiphenyl is contained within: (i) Access shall be restricted to authorized employees only;

(ii) Employees shall be required to wash hands, forearms, face and neck upon each exit from the regulated areas, close to the point of exit and before engaging in other activities.

(3) *Open vessel system operations.* Open vessel system operations as defined in paragraph (b) (13) of this section are prohibited.

(4) *Transfer from a closed system, charging or discharging point operations, or otherwise opening a closed system.* In

operations involving "laboratory type hoods," or in locations where 4-Aminodiphenyl is contained in an otherwise "closed system," but is transferred, charged, or discharged into other normally closed containers, the provisions of this subparagraph shall apply. (i) Access shall be restricted to authorized employees only;

(ii) Each operation shall be provided with continuous local exhaust ventilation so that air movement is always from ordinary work areas to the operation. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated. Clean makeup air shall be introduced in sufficient volume to maintain the correct operation of the local exhaust system.

(iii) Employees shall be provided with, and required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), shoe covers and gloves prior to entering the regulated area.

(iv) Employees engaged in 4-Aminodiphenyl handling operations shall be provided with and required to wear and use a half-face, filter-type respirator for dusts, mists, and fumes, in accordance with § 1910.134. A respirator affording higher levels of protection may be substituted.

(v) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit, for purposes of decontamination or disposal. The contents of such impervious containers shall be identified, as required under paragraphs (c) (2), (3), and (4) of this section.

(vi) Employees shall be required to wash hands, forearms, face and neck on each exit from the regulated area, close to the point of exit, and before engaging in other activities.

(vii) Employees shall be required to shower after the last exit of the day.

(viii) Drinking fountains are prohibited in the regulated area.

(5) *Maintenance and decontamination activities.* In cleanup of leaks or spills, maintenance or repair operations on contaminated systems or equipment, where direct contact with 4-Aminodiphenyl could result, each authorized employee entering that area shall: (i) Be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood in accordance with § 1910.134.

(ii) Be decontaminated before removing the protective garments and hood;

(iii) Be required to shower upon removing the protective garments and hood.

(6) *Laboratory activities.* The requirements of this subparagraph shall apply to research and quality control activities involving the use of 4-Aminodiphenyl. (i) Mechanical pipetting aids shall be used for all pipetting procedures.

(ii) Experiments, procedures and equipment which could produce aerosols

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shall be confined to laboratory-type hoods or glove boxes.

(iii) Surfaces on which 4-Aminodiphenyl is handled shall be protected from contamination.

(iv) Contaminated wastes and animal carcasses shall be collected in impervious containers which are closed and decontaminated prior to removal from the work area. Such wastes and carcasses shall be incinerated in such a manner that no carcinogenic products are released.

(v) All other forms of 4-Aminodiphenyl shall be inactivated prior to disposal.

(vi) Laboratory vacuum systems shall be protected with high-efficiency scrubbers or with disposable absolute filters.

(vii) Employees engaged in animal support activities shall be (a) provided with, and required to wear, a complete protective clothing change, clean each day, including coveralls or pants and shirt, foot covers, head covers, gloves, and appropriate respiratory protective equipment or devices; and

(b) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified as required under paragraphs (e) (2), (3), and (4) of this section.

(c) Required to wash hands, forearms, face and neck upon each exit from the regulated area close to the point of exit, and before engaging in other activities; and

(d) Required to shower after the last exit of the day.

(viii) Employees, other than those engaged only in animal support activities, each day shall be (a) provided with and required to wear a clean change of appropriate laboratory clothing, such as a solid front gown, surgical scrub suit, or fully buttoned laboratory coat.

(b) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified as required under paragraphs (e) (2), (3), and (4) of this section.

(c) Required to wash hands, forearms, face and neck upon each exit from the regulated area close to the point of exit, and before engaging in other activities.

(ix) Air pressure in laboratory areas and animal rooms where 4-Aminodiphenyl is handled and bioassay studies are performed shall be negative in relation to the pressure in surrounding areas. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated.

(x) There shall be no connection between regulated areas and any other areas through the ventilation system.

(xi) A current inventory of 4-Aminodiphenyl shall be maintained.

(xii) Ventilated apparatus such as laboratory type hoods, shall be tested at least semi-annually or immediately after ventilation modification or maintenance operations, by personnel fully qualified to certify correct containment and operation.

(d) General regulated area requirements—(1) Employee identification. A daily roster of employees entering regulated areas shall be established and maintained. The rosters, or a summary of the rosters, shall be retained for a period of 20 years. The rosters and/or summaries shall be provided upon request to authorized representatives of the Assistant Secretary and the Director. In the event that the employer ceases business without a successor, rosters shall be forwarded by registered mail to the Director.

(2) Emergencies. In an emergency, immediate measures including, but not limited to, the requirements of subdivisions (i), (ii), (iii), (iv), and (v) of this subparagraph shall be implemented. (i) The potentially affected area shall be evacuated as soon as the emergency has been determined.

(ii) Hazardous conditions created by the emergency shall be eliminated and the potentially affected area shall be decontaminated prior to the resumption of normal operations.

(iii) Special medical surveillance by a physician shall be instituted within 24 hours for employees present in the potentially affected area at the time of the emergency. A report of the medical surveillance and any treatment shall be included in the incident report, in accordance with paragraph (f) (2) of this section.

(iv) Where an employee has a known contact with 4-Aminodiphenyl such employee shall be required to shower as soon as possible, unless contraindicated by physical injuries.

(v) An incident report on the emergency shall be reported as provided in paragraph (f) (2) of this section.

(3) Hygiene facilities and practices. (i) Storage or consumption of food, storage or use of containers of beverages, storage or application of cosmetics, smoking, storage of smoking materials, tobacco products or other products for chewing, or the chewing of such products, are prohibited in regulated areas.

(ii) Where employees are required by this section to wash, washing facilities shall be provided in accordance with § 1910.141(d)(1) and (2)(ii) through (vii).

(iii) Where employees are required by this section to shower, shower facilities shall be provided in accordance with § 1910.141(d)(3).

(iv) Where employees wear protective clothing and equipment clean change rooms shall be provided, in accordance with § 1910.141(e), for the number of

such employees required to change clothes.

(v) Where toilets are in regulated areas, such toilets shall be in a separate room.

(4) Contamination control. (i) Regulated areas, except for outdoor systems, shall be maintained under pressure negative with respect to nonregulated areas. Local exhaust ventilation may be used to satisfy this requirement. Clean makeup air in equal volume shall replace air removed.

(ii) Any equipment, material, or item taken into or removed from a regulated area shall be done so in a manner that does not cause contamination of nonregulated areas or the external environment.

(iii) Decontamination procedures shall be established and implemented to remove 4-Aminodiphenyl from the surface of materials, equipment and the decontamination facility.

(iv) Dry sweeping and dry mopping are prohibited.

(c) Signs, information and training

(1) Signs. (i) Entrances to regulated areas shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT
AUTHORIZED PERSONNEL ONLY

(ii) Entrances to regulated areas containing operations covered in paragraph (c) (5) of this section shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT EXPOSED IN
THIS AREA

IMPERVIOUS SUIT INCLUDING GLOVES,
BOOTS, AND AIR-SUPPLIED HOOD REQUIRED AT ALL TIMES

AUTHORIZED PERSONNEL ONLY

(iii) Appropriate signs and instructions shall be posted at the entrance and exit from regulated areas, informing employees of the procedures that must be followed in entering and leaving regulated areas.

(2) Container contents identification

(i) Containers of 4-Aminodiphenyl and containers required under paragraph (c) (4) (v) and (c) (6) (vii) (b), and (c) (6) (viii) (b) of this section which are accessible only to, and handled only by authorized employees, or by other employees trained in accordance with paragraph (5) of this paragraph, shall have contents identification limited to generic or proprietary name, or other proprietary identification, of the carcinogen and percent.

(ii) Containers of 4-Aminodiphenyl and containers required under paragraphs (c) (4) (v), (c) (6) (vii) (b), (c) (6) (viii) (b) of this section which are accessible to, or handled by, employees other than authorized employees or employees trained in accordance with paragraph (5) of this paragraph shall have contents identification which includes the full chemical name and Chemical Abstracts Service Registry number as listed in paragraph (a) (1) of this section.

(iii) Containers shall have the following words "CANCER-SUSPECT AGENT"

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immediately under or adjacent to contents identification.

(b) Containers which have 4-Aminodiphenyl contents with corrosive or irritating properties shall have label statements warning of such hazards, noting, appropriate, particularly sensitive or affected portions of the body.

(3) *Lettering.* Lettering on signs and instructions required, by subparagraph (1) shall be a minimum letter height of inches. Labels on containers required under this section shall not be less than the size of the largest lettering on the package, and not less than 8 point type, in any instance. *Provided,* That no such required lettering need be more than 1 inch in height.

(4) *Prohibited statements.* No statement shall appear on or near any required sign, label, or instruction which contradicts or detracts from the effect of any required warning, information or instruction.

(5) *Training and indoctrination.* (1) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to: (a) The nature of the carcinogenic hazards of 4-Aminodiphenyl, including local and systemic toxicity;

(b) The specific nature of the operation involving 4-Aminodiphenyl which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of 4-Aminodiphenyl;

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in this application.

(iii) All materials relating to the program shall be provided upon request to authorized representatives of the Assistant Secretary and the Director.

(f) *Reports.*—(1) *Operations.* Not later than March 1, 1974, the information required in subdivisions (i), (ii), (iii), and (iv) of this subparagraph shall be reported in writing to the nearest OSHA Area Director. Any changes in such information shall be similarly reported in writing within 15 calendar days of such change. (i) A brief description and in-plant location of the area(s) regulated and the address of each regulated area;

(ii) The name(s) and other identifying information as to the presence of 4-Aminodiphenyl in each regulated area;

(iii) The number of employees in each regulated area, during normal operations including maintenance activities; and

(iv) The manner in which 4-Aminodiphenyl is present in each regulated area; e.g. whether it is manufactured, processed, used, repackaged, released, stored, or otherwise handled.

(2) *Incidents.* Incidents which result in the release of 4-Aminodiphenyl into any area where employees may be potentially exposed shall be reported in accordance with this subparagraph. (i) A report of the occurrence of the incident and the facts obtainable at that time including a report on any medical treatment of affected employees shall be made within 24 hours to the nearest OSHA Area Director.

(ii) A written report shall be filed with the nearest OSHA Area Director within 15 calendar days thereafter and shall include: (a) A specification of the amount of material released, the amount of time involved, and an explanation of the procedure used in determining this figure;

(b) A description of the area involved, and the extent of known and possible employee exposure and area contamination; and

(c) A report of any medical treatment of affected employees, and any medical surveillance program implemented; and

(d) An analysis of the circumstances of the incident, and measures taken or to be taken, with specific completion dates, to avoid further similar releases.

(g) *Medical surveillance.* At no cost to the employee, a program of medical surveillance shall be established and implemented for employees considered for assignment to enter regulated areas, and for authorized employees. (1) *Examinations.* (i) Before an employee is assigned to enter a regulated area, a preassignment physical examination by a physician shall be provided. The examination shall include the personal history of the employee, family and occupational background, including genetic and environmental factors.

(ii) Authorized employees shall be provided periodic physical examinations, not less often than annually, following the preassignment examination.

(iii) In all physical examinations, the examining physician shall consider whether there exist conditions of increased risk, including reduced immunological competence, those undergoing treatment with steroids or cytotoxic agents, pregnancy and cigarette smoking.

(2) *Records.* (i) Employers of employees examined pursuant to this paragraph shall cause to be maintained complete and accurate records of all such medical examinations. Records shall be maintained for the duration of the employee's employment. Upon termination of the employee's employment, including retirement or death, or in the event that the employer ceases business without a successor, records, or notarized true copies thereof, shall be forwarded by registered mail to the Director.

(ii) Records required by this paragraph shall be provided upon request to

authorized representatives of the Assistant Secretary or the Director; and upon request of an employee or former employee, to a physician designated by the employee or to a new employer.

(iii) Any physician who conducts a medical examination required by this paragraph shall furnish to the employer a statement of the employee's suitability for employment in the specific exposure.

§ 1910.93 Ethyleneimine.

(a) *Scope and application.* (1) This section applies to any area in which Ethyleneimine, Chemical Abstracts Service Registry Number 151564 is manufactured, processed, repackaged, released, handled, or stored, but shall not apply to trans-shipment in sealed containers, except for the labeling requirements under paragraphs (e) (2), (3), and (4) of this section.

(2) This section shall not apply to solid or liquid mixtures containing less than 1.0 percent by weight or volume of Ethyleneimine.

(b) *Definitions.* For the purposes of this section: (1) "Absolute filter" is one capable of retaining 99.97 percent of a mono disperse aerosol of 0.3 μ m particles.

(2) "Authorized employee" means an employee whose duties require him to be in the regulated area and who has been specifically assigned by the employer.

(3) "Clean change room" means a room where employees put on clean clothing and/or protective equipment in an environment free of Ethyleneimine. The clean change room shall be contiguous to and have an entry from a shower room, when the shower room facilities are otherwise required in this section.

(4) "Closed system" means an operation involving Ethyleneimine where containment prevents the release of Ethyleneimine into regulated areas, non-regulated areas, or the external environment.

(5) "Decontamination" means the inactivation of Ethyleneimine or its safe disposal.

(6) "Director" means the Director, National Institute for Occupational Safety and Health, or any person directed by him or the Secretary of Health, Education, and Welfare to act for the Director.

(7) "Disposal" means the safe removal of Ethyleneimine from the work environment.

(8) "Emergency" means an unforeseen circumstance or set of circumstances resulting in the release of Ethyleneimine which may result in exposure to or contact with Ethyleneimine.

(9) "External environment" means any environment external to regulated and nonregulated areas.

(10) "Isolated system" means a fully enclosed structure other than the vessel of containment of Ethyleneimine, which is impervious to the passage of Ethyleneimine, and which would prevent the entry of Ethyleneimine into regulated areas, nonregulated areas, or the external environment, should leakage or spillage from the vessel of containment occur.

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(11) "Laboratory type hood" is a device enclosed on three sides and the top and bottom, designed and maintained so as to draw air inward at an average linear face velocity of 150 feet per minute with a minimum of 125 feet per minute; designed, constructed, and maintained in such a way that an operation involving Ethylenimine within the hood does not require the insertion of any portion of any employee's body other than his hands and arms.

(12) "Nonregulated area" means any area under the control of the employer where entry and exit is neither restricted nor controlled.

(13) "Open-vessel system" means an operation involving Ethylenimine in an open vessel, which is not in an isolated system, a laboratory type hood, nor in any other system affording equivalent protection against the entry of Ethylenimine into regulated areas, nonregulated areas, or the external environment.

(14) "Protective clothing" means clothing designed to protect an employee against contact with or exposure to Ethylenimine.

(15) "Regulated area" means an area where entry and exit is restricted and controlled.

(c) *Requirements for areas containing Ethylenimine.* A regulated area shall be established by an employer where Ethylenimine is manufactured, processed, used, repackaged, released, handled or stored. All such areas shall be controlled in accordance with the requirements for the following category or categories describing the operation involved: (1) *Isolated systems.* Employees working with Ethylenimine within an isolated system, such as a "glove box" shall wash their hands and arms upon completion of the assigned task and before engaging in other activities not associated with the isolated system.

(2) *Closed system operation.* Within regulated areas where Ethylenimine is stored in sealed containers, or contained in a closed system, including piping systems, with any sample ports or openings closed while Ethylenimine is contained within. Access shall be restricted to authorized employees only.

(3) *Open vessel system operations.* Open vessel system operations as defined in paragraph (b) (13) of this section are prohibited.

(4) *Transfer from a closed system, charging or discharging point operations, or otherwise opening a closed system.* In operations involving "laboratory type hoods," or in locations where Ethylenimine is contained in an otherwise "closed system," but is transferred, charged, or discharged into other normally closed containers, the provisions of this subparagraph shall apply. (i) Access shall be restricted to authorized employees only;

(ii) Each operation shall be provided with continuous local exhaust ventilation so that air movement is always from ordinary work areas to the operation. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated. Clean makeup air shall be in-

troduced in sufficient volume to maintain the correct operation of the local exhaust system.

(iii) Employees shall be provided with, and required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), and gloves prior to entering the regulated area.

(iv) Employees engaged in Ethylenimine handling operations shall be provided with and required to wear and use a full-face, supplied air respirator, of the continuous flow or pressure-demand type, in accordance with § 1910.134.

(v) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified, as required under paragraphs (e) (2), (3), and (4) of this section.

(vi) Drinking fountains are prohibited in the regulated area.

(5) *Maintenance and decontamination activities.* In cleanup of leaks or spills, maintenance or repair operations on contaminated systems or equipment, where direct contact with Ethylenimine could result, each authorized employee entering that area shall: (i) Be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood in accordance with § 1910.134;

(ii) Be decontaminated before removing the protective garments and hood;

(iii) Be required to shower upon removing the protective garments and hood.

(6) *Laboratory activities.* The requirements of this subparagraph shall apply to research and quality control activities involving the use of Ethylenimine. (i) Mechanical pipetting aids shall be used for all pipetting procedures.

(ii) Experiments, procedures and equipment which could produce aerosols shall be confined to laboratory-type hoods or glove boxes.

(iii) Surfaces on which Ethylenimine is handled shall be protected from contamination.

(iv) Contaminated wastes and animal carcasses shall be collected in impervious containers which are closed and decontaminated prior to removal from the work area. Such wastes and carcasses shall be incinerated in such a manner that no carcinogenic products are released.

(v) All other forms of Ethylenimine shall be inactivated prior to disposal.

(vi) Laboratory vacuum systems shall be protected with high-efficiency scrubbers.

(vii) Employees engaged in animal support activities shall be (a) provided with, and required to wear, a complete protective clothing change, clean each day, including coveralls or pants and shirt, foot covers, head covers, gloves, and appropriate respiratory protective equipment or devices; and

(b) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified as required under paragraphs (e) (2), (3), and (4) of this section.

(c) Required to shower after the last exit of the day.

(viii) Employees, other than those engaged only in animal support activities, each day shall be (a) provided with and required to wear a clean change of appropriate laboratory clothing, such as solid front gown, surgical scrub suit, or fully buttoned laboratory coat.

(b) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified as required under paragraphs (e) (2), (3), and (4) of this section.

(c) Required to wash hands, forearm, face and neck upon each exit from a regulated area close to the point of exit and before engaging in other activities.

(ix) Air pressure in laboratory area and animal rooms where Ethylenimine is handled and bioassay studies are performed shall be negative in relation to the pressure in surrounding areas. Exhaust air shall not be discharged to regulated areas, nonregulated areas or to external environment unless decontaminated.

(x) There shall be no connection between regulated areas and any other areas through the ventilation system.

(xi) A current inventory of Ethylenimine shall be maintained.

(xii) Ventilated apparatus, such as laboratory type hoods, shall be tested at least semi-annually or immediately after ventilation modification or maintenance operations, by personnel fully qualified to certify correct containment and operation.

(d) *General regulated area requirements.*—(1) *Employee identification.* A daily roster of employees entering regulated areas shall be established and maintained. The rosters or a summary of the rosters, shall be retained for a period of 20 years. The rosters or summary shall be provided upon request to authorized representatives of Assistant Secretary and the Director the event that the employer ceases business without a successor, rosters be forwarded by registered mail to the Director.

(2) *Emergencies.* In an emergency, immediate measures including, but not limited to, the requirements of sections (i), (ii), (iii), (iv), and (v) of this subparagraph shall be implemented. The potentially affected area shall

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as soon as the emergency has been determined.

(ii) Hazardous conditions created by the emergency shall be eliminated and the potentially affected area shall be decontaminated prior to the resumption of normal operations.

(iii) Special medical surveillance by a physician shall be instituted within 24 hours for employees present in the potentially affected area at the time of the emergency. A report of the medical surveillance and any treatment shall be included in the incident report, in accordance with paragraph (f)(2) of this section.

(iv) Where an employee has a known contact with Ethylenimine, such employee shall be required to shower as soon as possible, unless contraindicated by physical injuries.

(v) An incident report on the emergency shall be reported as provided in paragraph (f)(2) of this section.

(vi) Emergency deluge showers and eyewash fountains supplied with running potable water shall be located near, within sight of, and on the same level with locations where a direct exposure of Ethylenimine would be most likely as a result of equipment failure, or improper work practice.

(3) *Hygiene facilities and practices.*

(i) Storage or consumption of food, storage or use of containers of beverages, storage or application of cosmetics, smoking, storage of smoking materials, tobacco products or other products for chewing, or the chewing of such products, are prohibited in regulated areas.

(ii) Where employees wear protective clothing and equipment clean change rooms shall be provided, in accordance with § 1910.141(e), for the number of such employees required to change clothes.

(iii) Where toilets are in regulated areas, such toilets shall be in a separate room.

(iv) Where employees are required by this section to wash, washing facilities shall be provided in accordance with § 1910.141(d)(1) and (2)(ii) through (vii).

(v) Where employees are required by this section to shower, shower facilities shall be provided in accordance with § 1910.141(d)(3).

(4) *Contamination control.* (i) Regulated areas, except for outdoor systems, shall be maintained under pressure negative with respect to nonregulated areas. Local exhaust ventilation may be used to satisfy this requirement. Clean make-up air in equal volume shall replace air removed.

(ii) Any equipment, material, or other item taken into or removed from a regulated area shall be done so in a manner that does not cause contamination in nonregulated areas or the external environment.

(iii) Decontamination procedures shall be established and implemented to remove Ethylenimine from the surfaces of materials, equipment and the decontamination facility.

(c) *Signs, information and training.*—
(1) *Signs.* (i) Entrances to regulated areas shall be posted with signs bearing the legend:

**CANCER-SUSPECT AGENT
AUTHORIZED PERSONNEL ONLY**

(ii) Entrances to regulated areas containing operations covered in paragraph (c)(5) of this section shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT EXPOSED IN THIS AREA

IMPERVIOUS SUIT INCLUDING GLOVES, BOOTS, AND AIR-SUPPLIED HOOD REQUIRED AT ALL TIMES

AUTHORIZED PERSONNEL ONLY

(iii) Appropriate signs and instructions shall be posted at the entrance to, and exit from, regulated areas, informing employees of the procedures that must be followed in entering and leaving a regulated area.

(2) *Container contents identification.*

(i) Containers of Ethylenimine and containers required under paragraphs (c)(4)(v) and (c)(6)(vii)(b), and (c)(6)(viii)(b) of this section which are accessible only to, and handled only by, authorized employees, or by other employees trained in accordance with subparagraph (5) of this paragraph, may have contents identification limited to a generic or proprietary name, or other proprietary identification, of the carcinogen and percent.

(ii) Containers of Ethylenimine and containers required under paragraphs (c)(4)(v), (c)(6)(vii)(b), and (c)(6)(viii)(b) of this section which are accessible to, or handled by employees other than authorized employees or employees trained in accordance with subparagraph 5 of this paragraph shall have contents identification which includes the full chemical name and Chemical Abstracts Service Registry number as listed in paragraph (a)(1) of this section.

(iii) Containers shall have the warning words "CANCER-SUSPECT AGENT" displayed immediately under or adjacent to the contents identification.

(iv) Containers which have Ethylenimine contents with corrosive or irritating properties shall have label statements warning of such hazards, noting, if appropriate, particularly sensitive or affected portions of the body.

(3) *Lettering.* Lettering on signs and instructions required by subparagraph (1) of this paragraph shall be a minimum letter height of 2 inches. Labels on containers required under this section shall not be less than 1/2 the size of the largest lettering on the package, and not less than 8 point type in any instance: *Provided*, That no such required lettering need be more than 1 inch in height.

(4) *Prohibited statements.* No statement shall appear on or near any required sign, label, or instruction which contradicts or detracts from the effect of any required warning, information or instruction.

(5) *Training and indoctrination.* (i) Each employee prior to being authorized

to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to: (a) The nature of the carcinogenic hazards of Ethylenimine, including local and systemic toxicity;

(b) The specific nature of the operation involving Ethylenimine which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of Ethylenimine;

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

(iii) All materials relating to the program shall be provided upon request to authorized representatives of the Assistant Secretary and the Director.

(f) *Reports.*—(1) *Operations.* Not later than March 1, 1974, the information required in subdivisions (i), (ii), (iii), and (iv) of this subparagraph shall be reported in writing to the nearest OSHA Area Director. Any changes in such information shall be similarly reported in writing within 15 calendar days of such change. (i) A brief description and in-plant location of the area(s) regulated and the address of each regulated area;

(ii) The name(s) and other identifying information as to the presence of Ethylenimine in each regulated area;

(iii) The number of employees in each regulated area, during normal operations including maintenance activities; and

(iv) The manner in which Ethylenimine is present in each regulated area; e.g. whether it is manufactured, processed, used, repackaged, released, stored, or otherwise handled.

(2) *Incidents.* Incidents which result in the release of Ethylenimine into any area where employees may be potentially exposed shall be reported in accordance with this subparagraph. (i) A report of the occurrence of the incident and the facts obtainable at that time including a report on any medical treatment of affected employees shall be made within 24 hours to the nearest OSHA Area Director.

(ii) A written report shall be filed with the nearest OSHA Area Director within 15 calendar days thereafter and shall include: (a) A specification of the amount of material released, the amount of time involved, and an explanation of the pro-

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cedure used in determining this figure:

(b) A description of the area involved, and the extent of known and possible employee exposure and area contamination; and

(c) A report of any medical treatment of affected employees, and any medical surveillance program implemented; and

(d) An analysis of the circumstances of the incident, and measures taken or to be taken, with specific completion dates, to avoid further similar releases.

(g) *Medical surveillance.* At no cost to the employee, a program of medical surveillance shall be established and implemented for employees considered for assignment to enter regulated areas, and for authorized employees. (1) *Examinations.* (i) Before an employee is assigned to enter a regulated area, a preassignment physical examination by a physician shall be provided. The examination shall include the personal history of the employee, family and occupational background, including genetic and environmental factors.

(ii) Authorized employees shall be provided periodic physical examinations, not less often than annually, following the preassignment examination.

(iii) In all physical examinations, the examining physician shall consider whether there exist conditions of increased risk, including reduced immunological competence, those undergoing treatment with steroids or cytotoxic agents, pregnancy and cigarette smoking.

(2) *Records.* (i) Employers of employees examined pursuant to this paragraph shall cause to be maintained complete and accurate records of all such medical examinations. Records shall be maintained for the duration of the employee's employment. Upon termination of the employee's employment, including retirement or death, or in the event that the employer ceases business without a successor, records, or notarized true copies thereof, shall be forwarded by registered mail to the Director.

(ii) Records required by this paragraph shall be provided upon request to authorized representatives of the Assistant Secretary or the Director; and upon request of an employee or former employee, to a physician designated by the employee or to a new employer.

(iii) Any physician who conducts a medical examination required by this paragraph shall furnish to the employer a statement of the employee's suitability for employment in the specific exposure.

§ 1910.92m Beta-Propiolactone.

(a) *Scope and application.* (1) This section applies to any area in which beta-Propiolactone, Chemical Abstracts Service Registry Number 57578 is manufactured, processed, repackaged, released, handled, or stored, but shall not apply to trans-shipment in sealed containers, except for the labeling requirements under paragraphs (e) (2), (3), and (4) of this section.

(2) This section shall not apply to solid or liquid mixtures containing less than 1.0 percent by weight or volume of beta-Propiolactone.

(b) *Definitions.* For the purposes of this section: (1) "Absolute filter" is one capable of retaining 99.97 percent of a mono disperse aerosol of 0.3 μ m particles.

(2) "Authorized employee" means an employee whose duties require him to be in the regulated area and who has been specifically assigned by the employer.

(3) "Clean change room" means a room where employees put on clean clothing and/or protective equipment in an environment free of beta-Propiolactone. The clean change room shall be contiguous to and have an entry from a shower room, when the shower room facilities are otherwise required in this section.

(4) "Closed system" means an operation involving beta-Propiolactone where containment prevents the release of beta-Propiolactone into regulated areas, non-regulated areas, or the external environment.

(5) "Decontamination" means the inactivation of beta-Propiolactone or its safe disposal.

(6) "Director" means the Director, National Institute for Occupational Safety and Health, or any person directed by him or the Secretary of Health, Education, and Welfare to act for the Director.

(7) "Disposal" means the safe removal of beta-Propiolactone from the work environment.

(8) "Emergency" means an unforeseen circumstance or set of circumstances resulting in the release of beta-Propiolactone, which may result in exposure to or contact with beta-Propiolactone.

(9) "External environment" means any environment external to regulated and nonregulated areas.

(10) "Isolated system" means a fully enclosed structure other than the vessel of containment of beta-Propiolactone, which is impervious to the passage of beta-Propiolactone, and which would prevent the entry of beta-Propiolactone into regulated areas, nonregulated areas, or the external environment, should leakage or spillage from the vessel of containment occur.

(11) "Laboratory type hood" is a device enclosed on three sides and the top and bottom, designed and maintained so as to draw air inward at an average linear face velocity of 150 feet per minute with a minimum of 125 feet per minute; designed, constructed, and maintained in such a way that an operation involving beta-Propiolactone within the hood does not require the insertion of any portion of any employee's body other than his hands and arms.

(12) "Nonregulated area" means any area under the control of the employer where entry and exit is neither restricted nor controlled.

(13) "Open-vessel system" means an operation involving beta-Propiolactone in an open vessel, which is not in an isolated system, a laboratory type hood, nor in any other system affording equivalent protection against the entry of beta-Propiolactone into regulated areas, non-regulated areas, or the external environment.

(14) "Protective clothing" means clothing designed to protect an employee against contact with or exposure to beta-Propiolactone.

(15) "Regulated area" means an area where entry and exit is restricted and controlled.

(c) *Requirements for areas containing beta-Propiolactone.* A regulated area shall be established by an employer when beta-Propiolactone is manufactured, processed, used, repackaged, released, handled or stored. All such areas shall be controlled in accordance with the requirements for the following category categories describing the operation involved: (1) *Isolated systems.* Employees working with beta-Propiolactone within an isolated system, such as a "glove box" shall wash their hands and arms upon completion of the assigned task and before engaging in other activities not associated with the isolated system.

(2) *Closed system operation.* With regulated areas where beta-Propiolactone is stored in sealed containers, contained in a closed system, including piping systems, with any sample ports or openings closed while beta-Propiolactone is contained within. Access shall be restricted to authorized employees or

(3) *Open vessel system operation.* Open vessel system operations as defined in paragraph (b) (13) of this section are prohibited.

(4) *Transfer from a closed system charging or discharging point operation or otherwise opening a closed system.* Operations involving "laboratory type hoods," or in locations where beta-Propiolactone is contained in an otherwise "closed system," but is transferred, charged, or discharged into other normally closed containers, the provisions of this subparagraph shall apply. (i) Access shall be restricted to authorized employees only:

(ii) Each operation shall be provided with continuous local exhaust ventilation so that air movement is always from ordinary work areas to the operation. Exhaust air shall not be discharged to regulated areas, nonregulated areas, or the external environment unless contaminated. Clean makeup air shall be introduced in sufficient volume to maintain the correct operation of local exhaust system.

(iii) Employees shall be provided and required to wear, clean, full protective clothing (smocks, covers or long-sleeved shirt and pants), covers and gloves prior to entering regulated area.

(iv) Employees engaged in beta-Propiolactone handling operations shall be provided with and required to wear use a full-face, supplied air respirator of the continuous flow or pressure demand type, in accordance with § 1910.134.

(v) Prior to each exit from a regulated area, employees shall be required to move and leave protective clothing equipment at the point of exit and, at last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers

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be identified, as required under paragraphs (e) (2), (3), and (4) of this section.

(vi) Drinking fountains are prohibited in the regulated area.

(5) *Maintenance and decontamination activities.* In cleanup of leaks or spills, maintenance or repair operations on contaminated systems or equipment, where direct contact with beta-Propiolactone could result, each authorized employee entering that area shall: (i) Be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood in accordance with § 1910.134.

(ii) Be decontaminated before removing the protective garments and hood;

(iii) Be required to shower upon removing the protective garments and hood.

(6) *Laboratory activities.* The requirements of this subparagraph shall apply to research and quality control activities involving the use of beta-Propiolactone.

(i) Mechanical pipetting aids shall be used for all pipetting procedures.

(ii) Experiments, procedures and equipment which could produce aerosols shall be confined to laboratory-type hoods or glove boxes.

(iii) Surfaces on which beta-Propiolactone is handled shall be protected from contamination.

(iv) Contaminated wastes and animal carcasses shall be collected in impervious containers which are closed and decontaminated prior to removal from the work area. Such wastes and carcasses shall be incinerated in such a manner that no carcinogenic products are released.

(v) All other forms of beta-Propiolactone shall be inactivated prior to disposal.

(vi) Laboratory vacuum systems shall be protected with high-efficiency scrubbers.

(vii) Employees engaged in animal support activities shall be (a) provided with, and required to wear, a complete protective clothing change, clean each day, including coveralls or pants and shirt, foot covers, head covers, gloves, and appropriate respiratory protective equipment or devices; and

(b) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified as required under paragraphs (e) (2), (3), and (4) of this section.

(c) Required to shower after the last exit of the day.

(viii) Employees, other than those engaged only in animal support activities, each day shall be (a) provided with and required to wear a clean change of appropriate laboratory clothing, such as a solid front gown, surgical scrub suit, or fully buttoned laboratory coat.

(b) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified as required under paragraphs (e) (2), (3), and (4) of this section.

(c) Required to wash hands, forearms, face and neck upon each exit from the regulated area close to the point of exit, and before engaging in other activities.

(ix) Air pressure in laboratory areas and animal rooms where beta-Propiolactone is handled and bioassay studies are performed shall be negative in relation to the pressure in surrounding areas. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated.

(x) There shall be no connection between regulated areas and any other areas through the ventilation system.

(xi) A current inventory of beta-Propiolactone shall be maintained.

(xii) Ventilated apparatus such as laboratory type hoods, shall be tested at least semi-annually or immediately after ventilation modification or maintenance operations, by personnel fully qualified to certify correct containment and operation.

(d) *General regulated area requirements.* (1) *Employee identification.* A daily roster of employees entering regulated areas shall be established and maintained. The rosters or a summary of the rosters shall be retained for a period of 20 years. The rosters and/or summaries shall be provided upon request to authorized representatives of the Assistant Secretary and the Director. In the event that the employer ceases business without a successor, rosters shall be forwarded by registered mail to the Director.

(2) *Emergencies.* In an emergency, immediate measures including, but not limited to, the requirements of subdivisions (i), (ii), (iii), (iv), and (v) of this subparagraph shall be implemented. (i) The potentially affected area shall be evacuated as soon as the emergency has been determined.

(ii) Hazardous conditions created by the emergency shall be eliminated and the potentially affected area shall be decontaminated prior to the resumption of normal operations.

(iii) Special medical surveillance by a physician shall be instituted within 24 hours for employees present in the potentially affected area at the time of the emergency. A report of the medical surveillance and any treatment shall be included in the incident report, in accordance with paragraph (f) (2) of this section.

(iv) Where an employee has a known contact with beta-Propiolactone, such employee shall be required to shower as soon as possible, unless contraindicated by physical injuries.

(v) An incident report on the emergency shall be reported as provided in paragraph (f) (2) of this section.

(vi) Emergency deluge showers and eyewash fountains supplied with running potable water shall be located near, within sight of, and on the same level with locations where a direct exposure to beta-Propiolactone would be most likely as a result of equipment failure, or improper work practice.

(3) *Hygiene facilities and practices.* (i) Storage or consumption of food, storage or use of containers of beverages, storage or application of cosmetics, smoking, storage of smoking materials, tobacco products or other products for chewing, or the chewing of such products, are prohibited in regulated areas.

(ii) Where employees wear protective clothing and equipment clean change rooms shall be provided, in accordance with § 1910.141(e), for the number of such employees required to change clothes.

(iii) Where toilets are in regulated areas, such toilets shall be in a separate room.

(iv) Where employees are required by this section to wash, washing facilities shall be provided in accordance with § 1910.141(d) (1) and (2) (ii) through (vii).

(v) Where employees are required by this section to shower, shower facilities shall be provided in accordance with § 1910.141(d) (3).

(4) *Contamination control.* (i) Regulated areas, except for outdoor systems, shall be maintained under pressure negative with respect to nonregulated areas. Local exhaust ventilation may be used to satisfy this requirement. Clean makeup air in equal volume shall replace air removed.

(ii) Any equipment, material, or other item taken into or removed from a regulated area shall be done so in a manner that does not cause contamination in nonregulated areas or the external environment.

(iii) Decontamination procedures shall be established and implemented to remove beta-Propiolactone from the surfaces of materials, equipment and the decontamination facility.

(e) *Signs, information and training.* (1) *Signs.* (i) Entrances to regulated areas shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT

AUTHORIZED PERSONNEL ONLY

(ii) Entrances to regulated areas containing operations covered in paragraph (c) (5) of this section shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT EXPOSED IN THIS AREA

IMPERVIOUS SUIT INCLUDING GLOVES, BOOTS, AND AIR-SUPPLIED HOOD REQUIRED AT ALL TIMES

AUTHORIZED PERSONNEL ONLY

(iii) Appropriate signs and instructions shall be posted at the entrance to, and exit from, regulated areas, informing

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employees of the procedures that must be followed in entering and leaving a regulated area.

(2) *Container contents identification.*

(i) Containers of beta-Propiolactone and containers required under paragraphs (c) (4) (v) and (c) (6) (vii) (b), and (c) (6) (viii) (b) of this section which are accessible only to, and handled only by, authorized employees, or by other employees trained in accordance with subparagraph (5) of this paragraph, may have contents identification limited to a generic or proprietary name, or other proprietary identification, of the carcinogen and percent.

(ii) Containers of beta-Propiolactone and containers required under paragraphs (c) (4) (v), (c) (6) (vii) (b), and (c) (6) (viii) (b) of this section which are accessible to, or handled by, employees other than authorized employees or employees trained in accordance with subparagraph (5) of this paragraph shall have contents identification which includes the full chemical name and Chemical Abstracts Service Registry number as listed in paragraph (a) (1) of this section.

(iii) Containers shall have the warning words "CANCER-SUSPECT AGENT" displayed immediately under or adjacent to the contents identification.

(iv) Containers which have beta-Propiolactone contents with corrosive or irritating properties shall have label statements warning of such hazards, noting, if appropriate, particularly sensitive or affected portions of the body.

(3) *Lettering.* Lettering on signs and instructions required by subparagraph (1) shall be a minimum letter height of 2 inches. Labels on containers required under this section shall not be less than 1/2 the size of the largest lettering on the package, and not less than 3 point type in any instance: *Provided*, That no such required lettering need be more than 1 inch in height.

(4) *Prohibited statements.* No statement shall appear on or near any required sign, label, or instruction which contradicts or detracts from the effect of any required warning, information or instruction.

(5) *Training and indoctrination.* (i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to: (a) The nature of the carcinogenic hazards of beta-Propiolactone, including local and systemic toxicity;

(b) The specific nature of the operation involving beta-Propiolactone which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation

of conditions and situations which may result in the release of beta-Propiolactone;

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

(iii) All materials relating to the program shall be provided upon request to authorized representatives of the Assistant Secretary and the Director.

(f) *Reports.* (1) *Operations.* Not later than March 1, 1974, the information required in subdivisions (i), (ii), (iii), and (iv) of this subparagraph shall be reported in writing to the nearest OSHA Area Director. Any changes in such information shall be similarly reported in writing within 15 calendar days of such change. (i) A brief description and implant location of the area(s) regulated and the address of each regulated area;

(ii) The name(s) and other identifying information as to the presence of beta-Propiolactone in each regulated area;

(iii) The number of employees in each regulated area, during normal operations including maintenance activities; and

(iv) The manner in which beta-Propiolactone is present in each regulated area; e.g. whether it is manufactured, processed, used, repackaged, released, stored, or otherwise handled.

(2) *Incidents.* Incidents which result in the release of beta-Propiolactone into any area where employees may be potentially exposed shall be reported in accordance with this subparagraph. (i) A report of the occurrence of the incident and the facts obtainable at that time including a report on any medical treatment of affected employees shall be made within 24 hours to the nearest OSHA Area Director.

(ii) A written report shall be filed with the nearest OSHA Area Director within 15 calendar days thereafter and shall include: (a) A specification of the amount of material released, the amount of time involved, and an explanation of the procedure used in determining this figure;

(b) A description of the area involved, and the extent of known and possible employee exposure and area contamination; and

(c) A report of any medical treatment of affected employees, and any medical surveillance program implemented; and

(d) An analysis of the circumstances of the incident, and measures taken or to be taken, with specific completion dates, to avoid further similar releases.

(g) *Medical surveillance.* At no cost to the employee, a program of medical surveillance shall be established and implemented for employees considered for assignment to enter regulated areas, and for authorized employees. (1) *Examinations.* (i) Before an employee is assigned to enter a regulated area, a preassignment physical examination by a physi-

cian shall be provided. The examination shall include the personal history of employee, family and occupational background, including genetic and environmental factors.

(ii) Authorized employees shall be provided periodic physical examinations, less often than annually, following preassignment examination.

(iii) In all physical examinations, examining physician shall consider whether there exist conditions of increased risk, including reduced immunological competence, those undergoing treatment with steroids or cytotoxic agent, pregnancy and cigarette smoking.

(2) *Records.* (i) Employers of employees examined pursuant to this paragraph shall cause to be maintained complete and accurate records of all medical examinations. Records shall be maintained for the duration of the employee's employment. Upon termination of the employee's employment, including retirement or death, or in the event the employer ceases business without successor, records, or notarized copies thereof, shall be forwarded by registered mail to the Director.

(ii) Records required by this paragraph shall be provided upon request to authorized representatives of the Assistant Secretary or the Director; upon request of an employee or former employee, to a physician designated by the employee or to a new employer.

(iii) Any physician who conducts medical examination required by paragraph shall furnish to the employer a statement of the employee's suitability for employment in the specific exposure.

§ 1910.93a 2-Acetylaminofluorene.

(a) *Scope and application.* (1) This section applies to any area in which Acetylaminofluorene, Chemical Abstracts Service Registry Number 58963 is manufactured, processed, repackaged, leased, handled, or stored, but shall apply to trans-shipment in sealed containers, except for the labeling requirements under paragraphs (c) (2), (3), (4) of this section.

(2) This section shall not apply to solid or liquid mixtures containing less than 1.0 percent by weight or volume 2-Acetylaminofluorene.

(b) *Definitions.* For the purpose of this section: (1) "Absolute filter" is capable of retaining 99.97 percent mono disperse aerosol of 0.3 µm particle size.

(2) "Authorized employee" means employee who duties require him to enter the regulated area and who has specifically assigned by the employer.

(3) "Clean change room" means room where employees put on clothing and/or protective equipment in an environment free of 2-Acetylaminofluorene. The clean change room shall be contiguous to and have an entrance to a shower room, when the shower facilities are otherwise required by this section.

(4) "Closed system" means an operation involving 2-Acetylaminofluorene where containment prevents the release of 2-Acetylaminofluorene into the

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regulated areas; or the external environment.

(5) "Decontamination" means the inactivation of 2-Acetylaminofluorene or safe disposal.

(6) "Director" means the Director, National Institute for Occupational Safety and Health, or any person directed by him or the Secretary of Health, Education, and Welfare to act for the Director.

(7) "Disposal" means the safe removal of 2-Acetylaminofluorene from the work environment.

(8) "Emergency" means an unforeseen circumstance or set of circumstances resulting in the release of 2-Acetylaminofluorene which may result in exposure to or contact with 2-Acetylaminofluorene.

(9) "External environment" means any environment external to regulated and nonregulated areas.

(10) "Isolated system" means a fully enclosed structure other than the vessel of containment of 2-Acetylaminofluorene, which is impervious to the passage of 2-Acetylaminofluorene, and which would prevent the entry of 2-Acetylaminofluorene into regulated areas, nonregulated areas, or the external environment, should leakage or spillage from the vessel of containment occur.

(11) "Laboratory type hood" is a device enclosed on three sides and the top and bottom, designed and maintained so as to draw air inward at an average face velocity of 150 feet per minute, and a minimum of 125 feet per minute, designed, constructed, and maintained in such a way that an operation involving 2-Acetylaminofluorene within the hood does not require the insertion of any portion of any employee's body other than his hands and arms.

(12) "Nonregulated area" means any area under the control of the employer where entry and exit is neither restricted nor controlled.

(13) "Open-vessel system" means an operation involving 2-Acetylaminofluorene in an open vessel, which is not in an isolated system, a laboratory type hood, nor in any other system affording equivalent protection against the entry of 2-Acetylaminofluorene into regulated areas, nonregulated areas, or the external environment.

(14) "Protective clothing" means clothing designed to protect an employee against contact with or exposure to 2-Acetylaminofluorene.

(15) "Regulated area" means an area where entry and exit is restricted and controlled.

(c) *Requirements for areas containing 2-Acetylaminofluorene.* A regulated area shall be established by an employer where 2-Acetylaminofluorene is manufactured, processed, used, repackaged, released, handled or stored. All such areas shall be controlled in accordance with the requirements for the following category or categories describing the operation involved: (1) *Isolated systems.* Employees working with 2-Acetylaminofluorene within an isolated system, such as a "glove box" shall wash their hands and arms upon completion of the assigned

task and before engaging in other activities not associated with the isolated system.

(2) *Closed system operation.* Within regulated areas where 2-Acetylaminofluorene is stored in sealed containers, or contained in a closed system, including piping systems, with any sample ports or openings closed while 2-Acetylaminofluorene is contained within: (i) Access shall be restricted to authorized employees only;

(ii) Employees shall be required to wash hands, forearms, face and neck upon each exit from the regulated areas, close to the point of exit and before engaging in other activities.

(3) *Open vessel system operations.* Open vessel system operations as defined in paragraph (b) (13) of this section are prohibited.

(4) *Transfer from a closed system, charging or discharging point operations, or otherwise opening a closed system.* In operations involving "laboratory type hoods," or in locations where 2-Acetylaminofluorene is contained in an otherwise "closed system," but is transferred, charged, or discharged into other normally closed containers, the provisions of this subparagraph shall apply. (i) Access shall be restricted to authorized employees only;

(ii) Each operation shall be provided with continuous local exhaust ventilation so that air movement is always from ordinary work areas to the operation. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated. Clean makeup air shall be introduced in sufficient volume to maintain the correct operation of the local exhaust system.

(iii) Employees shall be provided with, and required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), shoe covers and gloves prior to entering the regulated area.

(iv) Employees engaged in 2-Acetylaminofluorene handling operations shall be provided with and required to wear and use a half-face, filter-type respirator for dusts, mists, and fumes, in accordance with § 1910.134. A respirator affording higher levels of protection may be substituted.

(v) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified, as required under paragraphs (c) (2), (3), and (4) of this section.

(vi) Employees shall be required to wash hands, forearms, face and neck on each exit from the regulated area, close to the point of exit, and before engaging in other activities.

(vii) Employees shall be required to shower after the last exit of the day.

(viii) Drinking fountains are prohibited in the regulated area.

(5) *Maintenance and decontamination activities.* In cleanup of leaks or spills, maintenance or repair operations on contaminated systems or equipment, where direct contact with 2-Acetylaminofluorene could result, each authorized employee entering that area shall: (i) Be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood in accordance with § 1910.134.

(ii) Be decontaminated before removing the protective garments and hood;

(iii) Be required to shower upon removing the protective garments and hood.

(6) *Laboratory activities.* The requirements of this subparagraph shall apply to research and quality control activities involving the use of 2-Acetylaminofluorene. (i) Mechanical pipetting aids shall be used for all pipetting procedures. (ii) Experiments, procedures and equipment which could produce aerosols shall be confined to laboratory-type hoods or glove boxes.

(iii) Surfaces on which 2-Acetylaminofluorene is handled shall be protected from contamination.

(iv) Contaminated wastes and animal carcasses shall be collected in impervious containers which are closed and decontaminated prior to removal from the work area. Such wastes and carcasses shall be incinerated in such a manner that no carcinogenic products are released.

(v) All other forms of 2-Acetylaminofluorene shall be inactivated prior to disposal.

(vi) Laboratory vacuum systems shall be protected with high-efficiency scrubbers or with disposable absolute filters.

(vii) Employees engaged in animal support activities shall be: (a) provided with, and required to wear, a complete protective clothing change, clean each day, including coveralls or pants and shirt, foot covers, head covers, gloves, and appropriate respiratory equipment or devices; and

(b) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified as required under paragraphs (c) (2), (3), and (4) of this section.

(c) Required to wash hands, forearms, face and neck upon each exit from the regulated area close to the point of exit, and before engaging in other activities; and

(d) Required to shower after the last exit of the day.

(viii) Employees, other than those engaged only in animal support activities, each day shall be: (a) provided with and required to wear a clean change of appropriate laboratory clothing, such as a solid front gown, surgical scrub suit, or fully buttoned laboratory coat.

(b) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and

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equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified as required under paragraphs (c) (2), (3), and (4) of this section.

(c) Required to wash hands, forearms, face and neck upon each exit from the regulated area close to the point of exit, and before engaging in other activities.

(ix) Air pressure in laboratory areas and animal rooms where 2-Acetylaminofluorene is handled and bioassay studies are performed shall be negative in relation to the pressure in surrounding areas. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated.

(x) There shall be no connection between regulated areas and any other areas through the ventilation system.

(xi) A current inventory of 2-Acetylaminofluorene shall be maintained.

(xii) Ventilated apparatus such as laboratory type hoods, shall be tested at least semi-annually or immediately after ventilation modification or maintenance operations, by personnel fully qualified to certify correct containment and operation.

(d) General regulated area requirements.—(1) Employee identification. A daily roster of employees entering regulated areas shall be established and maintained. The rosters or a summary of the rosters shall be retained for a period of 20 years. The rosters and/or summaries shall be provided upon request to authorized representatives of the Assistant Secretary and the Director. In the event that the employer ceases business without a successor, rosters shall be forwarded by registered mail to the Director.

(2) Emergencies. In an emergency, immediate measures including, but not limited to, the requirements of subdivisions (i), (ii), (iii), (iv), and (v) of this subparagraph shall be implemented. (i) The potentially affected area shall be evacuated as soon as the emergency has been determined.

(ii) Hazardous conditions created by the emergency shall be eliminated and the potentially affected area shall be decontaminated prior to the resumption of normal operations.

(iii) Special medical surveillance by a physician shall be instituted within 24 hours for employees present in the potentially affected area at the time of the emergency. A report of the medical surveillance and any treatment shall be included in the incident report, in accordance with paragraph (f) (2) of this section.

(iv) Where an employee has a known contact with 2-Acetylaminofluorene, such employee shall be required to shower as soon as possible, unless contraindicated by physical injuries.

(v) An incident report on the emergency shall be reported as provided in paragraph (f) (2) of this section.

(3) Hygiene facilities and practices. (i) Storage or consumption of food, storage or use of containers of beverages, storage or application of cosmetics, smoking, storage of smoking materials, tobacco products or other products for chewing, or the chewing of such products, are prohibited in regulated areas.

(ii) Where employees are required by this section to wash, washing facilities shall be provided in accordance with § 1910.141(d) (1) and (2) (iv) through (vii).

(iii) Where employees are required by this section to shower, shower facilities shall be provided in accordance with § 1910.141(d) (3).

(iv) Where employees wear protective clothing and equipment clean change rooms shall be provided, in accordance with § 1910.141(e), for the number of such employees required to change clothes.

(v) Where toilets are in regulated areas, such toilets shall be in a separate room.

(4) Contamination control. (i) Regulated areas, except for outdoor systems, shall be maintained under pressure negative with respect to nonregulated areas. Local exhaust ventilation may be used to satisfy this requirement. Clean make-up air in equal volume shall replace air removed.

(ii) Any equipment, material, or other item taken into or removed from a regulated area shall be done so in a manner that does not cause contamination in nonregulated areas or the external environment.

(iii) Decontamination procedures shall be established and implemented to remove 2-Acetylaminofluorene from the surfaces of materials, equipment and the decontamination facility.

(iv) Dry sweeping and dry mopping are prohibited.

(e) Signs, information and training.—

(1) Signs. (i) Entrances to regulated areas shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT
AUTHORIZED PERSONNEL ONLY

(ii) Entrances to regulated areas containing operations covered in paragraph (c) (5) of this section shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT EXPOSED IN THIS
AREA

IMPERVIOUS SUIT INCLUDING GLOVES,
BOOTS, AND AIR-SUPPLIED HOOD RE-
QUIRED AT ALL TIMES

AUTHORIZED PERSONNEL ONLY

(iii) Appropriate signs and instructions shall be posted at the entrance to, and exit from, regulated areas, informing employees of the procedures that must be followed in entering and leaving a regulated area.

(2) Container contents identification.

(i) Containers of 2-Acetylaminofluorene and containers required under paragraphs (c) (4) (v) and (c) (6) (vii) (b), and (c) (6) (viii) (b) of this section which are accessible only to, and handled only by, authorized employees, or by other

employees trained in accordance with subparagraph (5) of this paragraph, must have contents identification limited to generic or proprietary name, or other proprietary identification, of the carcinogen and percent.

(ii) Containers of 2-Acetylaminofluorene and containers required under paragraphs (c) (4) (v), (c) (6) (vii) (b) and (c) (6) (viii) (b) of this section which are accessible to, or handled by, employees other than authorized employees or employees trained in accordance with subparagraph (5) of this paragraph shall have contents identification which includes the full chemical name and Chemical Abstracts Service Registry number as listed in paragraph (a) (1) of this section.

(iii) Containers shall have the warning words "CANCER-SUSPECT AGENT" displayed immediately under or adjacent to the contents identification.

(iv) Containers which have 2-Acetylaminofluorene contents with corrosive or irritating properties shall have labels with statements warning of such hazards, noting, if appropriate, particularly sensitive or affected portions of the body.

(3) Lettering. Lettering on signs or instructions required by subparagraph (1) shall be a minimum letter height of 2 inches. Labels on containers required under this section shall not be less than 1/2 the size of the largest lettering on the package, and not less than 8 point type in any instance; *Provided*, That such required lettering need be no less than 1 inch in height.

(4) Prohibited statements. No statement shall appear on or near any required sign, label, or instruction which contradicts or detracts from the effect of any required warning, information or instruction.

(5) Training and indoctrination. Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to: (a) The nature of the carcinogenic hazards of 2-Acetylaminofluorene, including local and systemic toxicity;

(b) The specific nature of the operation involving 2-Acetylaminofluorene which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of examination;

(d) The purpose for and application of decontamination practices and poses;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific emergency procedures;

(g) Specific information to all employees in recognition and evaluation of conditions and situations which result in the release of 2-Acetylaminofluorene;

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section, employee's first training and indoctrination program and annually thereafter.

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(i) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

(iii) All materials relating to the program shall be provided upon request to authorized representatives of the Assistant Secretary and the Director.

(f) **Reports.**—(1) **Operations.** Not later than March 1, 1974, the information required in subdivisions (i), (ii), (iii), and (iv) of this subparagraph shall be reported in writing to the nearest OSHA Area Director. Any changes in such information shall be similarly reported in writing within 15 calendar days of such change. (i) A brief description and in-plant location of the area(s) regulated and the address of each regulated area;

(ii) The name(s) and other identifying information as to the presence of 2-Acetylaminofluorene in each regulated area;

(iii) The number of employees in each regulated area, during normal operations including maintenance activities; and

(iv) The manner in which 2-Acetylaminofluorene is present in each regulated area; e.g. whether it is manufactured, processed, used, repackaged, released, stored, or otherwise handled.

(2) **Incidents.** Incidents which result in the release of 2-Acetylaminofluorene into any area where employees may be potentially exposed shall be reported in accordance with this subparagraph. (i) A report of the occurrence of the incident and the facts obtainable at that time including a report on any medical treatment of affected employees shall be made within 24 hours to the nearest OSHA Area Director.

(ii) A written report shall be filed with the nearest OSHA Area Director within 15 calendar days thereafter and shall include:

(a) A specification of the amount of material released, the amount of time involved, and an explanation of the procedure used in determining this figure;

(b) A description of the area involved, and the extent of known and possible employee exposure and area contamination; and

(c) A report of any medical treatment of affected employees, and any medical surveillance program implemented; and

(d) An analysis of the circumstances of the incident, and measures taken or to be taken, with specific completion dates, to avoid further similar releases.

(g) **Medical surveillance.** At no cost to the employee, a program of medical surveillance shall be established and implemented for employees considered for assignment to enter regulated areas, and for authorized employees. (1) **Examinations.** (i) Before an employee is assigned to enter a regulated area, a preassignment physical examination by a physician shall be provided. The examination shall include the personal history of the employee, family and occupational background, including genetic and environmental factors.

(ii) Authorized employees shall be provided periodic physical examinations, not

less often than annually, following the preassignment examination.

(iii) In all physical examinations, the examining physician shall consider whether there exist conditions of increased risk, including reduced immunological competence, those undergoing treatment with steroids or cytotoxic agents, pregnancy and cigarette smoking.

(2) **Records.** (i) Employers of employees examined pursuant to this paragraph shall cause to be maintained complete and accurate records of all such medical examinations. Records shall be maintained for the duration of the employee's employment. Upon termination of the employee's employment, including retirement or death, or in the event that the employer ceases business without a successor, records, or notarized true copies thereof, shall be forwarded by registered mail to the Director.

(ii) Records required by this paragraph shall be provided upon request to authorized representatives of the Assistant Secretary or the Director; and upon request of an employee or former employee, to a physician designated by the employee or to a new employer.

(iii) Any physician who conducts a medical examination required by this paragraph shall furnish to the employer a statement of the employee's suitability for employment in the specific exposure.

§ 1910.93a 4-Dimethylaminoazobenzene.

(a) **Scope and application.** (1) This section applies to any area in which 4-Dimethylaminoazobenzene, Chemical Abstracts Service Registry Number 69117 is manufactured, processed, repackaged, released, handled, or stored, but shall not apply to trans-shipment in sealed containers, except for the labeling requirements under paragraphs (c) (2), (3), and (4) of this section.

(2) This section shall not apply to solid or liquid mixtures containing less than 1.0 percent by weight or volume of 4-Dimethylaminoazobenzene.

(b) **Definitions.** For the purposes of this section: (1) "Absolute filter" is one capable of retaining 99.97 percent of a mono disperse aerosol of 0.3 μ m particles.

(2) "Authorized employee" means an employee whose duties require him to be in the regulated area and who has been specifically assigned by the employer.

(3) "Clean change room" means a room where employees put on clean clothing and/or protective equipment in an environment free of 4-Dimethylaminoazobenzene. The clean change room shall be contiguous to and have an entry from a shower room, when the shower room facilities are otherwise required in this section.

(4) "Closed system" means an operation involving 4-Dimethylaminoazobenzene where containment prevents the release of 4-Dimethylaminoazobenzene into regulated areas, nonregulated areas, or the external environment.

(5) "Decontamination" means the inactivation of 4-Dimethylaminoazobenzene or its safe disposal.

(6) "Director" means the Director, National Institute for Occupational Safety and Health, or any person directed by him or the Secretary of Health, Education, and Welfare to act for the Director.

(7) "Disposal" means the safe removal of 4-Dimethylaminoazobenzene from the work environment.

(8) "Emergency" means an unforeseen circumstance or set of circumstances resulting in the release of 4-Dimethylaminoazobenzene which may result in exposure to or contact with 4-Dimethylaminoazobenzene.

(9) "External environment" means any environment external to regulated and nonregulated areas.

(10) "Isolated system" means a fully enclosed structure other than the vessel of containment of 4-Dimethylaminoazobenzene, which is impervious to the passage of 4-Dimethylaminoazobenzene which would prevent the entry of 4-Dimethylaminoazobenzene into regulated areas, nonregulated areas, or the external environment, should leakage or spillage from the vessel of containment occur.

(11) "Laboratory type hood" is a device enclosed on three sides and the top and bottom, designed and maintained so as to draw air inward at an average linear face velocity of 150 feet per minute with a minimum of 125 feet per minute; designed, constructed, and maintained in such a way that an operation involving 4-Dimethylaminoazobenzene within the hood does not require the insertion of any portion of any employee's body other than his hands and arms.

(12) "Nonregulated area" means any area under the control of the employer where entry and exit is neither restricted nor controlled.

(13) "Open-vessel system" means an operation involving 4-Dimethylaminoazobenzene in an open vessel, which is not in an isolated system, a laboratory type hood, nor in any other system affording equivalent protection against the entry of 4-Dimethylaminoazobenzene into regulated areas, nonregulated areas, or the external environment.

(14) "Protective clothing" means clothing designed to protect an employee against contact with or exposure to 4-Dimethylaminoazobenzene.

(15) "Regulated area" means an area where entry and exit is restricted and controlled.

(c) **Requirements for areas containing 4-Dimethylaminoazobenzene.** A regulated area shall be established by an employer where 4-Dimethylaminoazobenzene is manufactured, processed, used, repackaged, released, handled or stored. All such areas shall be controlled in accordance with the requirements for the following category or categories describing the operation involved: (1) **Isolated systems.** Employees working with 4-Dimethylaminoazobenzene within an isolated system, such as a "glove box" shall wash their hands and arms upon completion of the assigned task and before engaging in other activities not associated with the isolated system.

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(2) *Closed system operation.* Within regulated areas where 4-Dimethylaminobenzene is stored in sealed containers, or contained in a closed system, including piping systems, with any sample ports or openings closed while 4-Dimethylaminobenzene is contained within: (i) Access shall be restricted to authorized employees only;

(ii) Employees shall be required to wash hands, forearms, face and neck upon each exit from the regulated areas, close to the point of exit and before engaging in other activities;

(3) *Open vessel system operations.* Open vessel system operations as defined in paragraph (b) (13) of this section are prohibited.

(4) *Transfer from a closed system, charging or discharging point operations, or otherwise opening a closed system.* In operations involving "laboratory type hoods," or in locations where 4-Dimethylaminobenzene is contained in an otherwise "closed system," but is transferred, charged, or discharged into other normally closed containers, the provisions of this subparagraph shall apply. (i) Access shall be restricted to authorized employees only;

(ii) Each operation shall be provided with continuous local exhaust ventilation so that air movement is always from ordinary work areas to the operation. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated. Clean makeup air shall be introduced in sufficient volume to maintain the correct operation of the local exhaust system.

(iii) Employees shall be provided with, and required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), shoe covers, and gloves prior to entering the regulated area.

(iv) Employees engaged in 4-Dimethylaminobenzene handling operations shall be provided with and required to wear and use a half-face, filter-type respirator for dusts, mists, and fumes, in accordance with § 1910.134. A respirator affording higher levels of protection may be substituted.

(v) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified, as required under paragraphs (e) (2), (3), and (4) of this section.

(vi) Employees shall be required to wash hands, forearms, face and neck on each exit from the regulated area, close to the point of exit, and before engaging in other activities.

(vii) Employees shall be required to shower after the last exit of the day.

(viii) Drinking fountains are prohibited in the regulated area.

(5) *Maintenance and decontamination activities.* In cleanup of leaks or

spills, maintenance or repair operations on contaminated systems or equipment, where direct contact with 4-Dimethylaminobenzene could result, each authorized employee entering that area shall: (i) be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood in accordance with § 1910.134.

(ii) Be decontaminated before removing the protective garments and hood;

(iii) Be required to shower upon removing the protective garments and hood;

(6) *Laboratory activities.* The requirements of this subparagraph shall apply to research and quality control activities involving the use of 4-Dimethylaminobenzene. (i) Mechanical pipetting aids shall be used for all pipetting procedures.

(ii) Experiments, procedures and equipment which could produce aerosols shall be confined to laboratory-type hoods or glove boxes.

(iii) Surface on which 4-Dimethylaminobenzene is handled shall be protected from contamination.

(iv) Contaminated wastes and animal carcasses shall be collected in impervious containers which are closed and decontaminated prior to removal from the work area. Such wastes and carcasses shall be incinerated in such a manner that no carcinogenic products are released.

(v) All other forms of 4-Dimethylaminobenzene shall be inactivated prior to disposal.

(vi) Laboratory vacuum systems shall be protected with high-efficiency scrubbers or with disposable absolute filters.

(vii) Employees engaged in animal support activities shall be (a) provided with, and required to wear, a complete protective clothing change, clean each day, including coveralls or pants and shirt, foot covers, head covers, gloves, and appropriate respiratory protective equipment or devices; and

(b) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified as required under paragraphs (e) (2), (3), and (4) of this section.

(c) Required to wash hands, forearms, face and neck upon each exit from the regulated area close to the point of exit, and before engaging in other activities; and

(d) Required to shower after the last exit of the day.

(viii) Employees, other than those engaged only in animal support activities, each day shall be (a) provided with and required to wear a clean change of appropriate laboratory clothing, such as a solid front gown, surgical scrub suit, or fully buttoned laboratory coat.

(b) Prior to each exit from a regulated area, employees shall be required to re-

move and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified as required under paragraph (e) (2), (3), and (4) of this section.

(c) Required to wash hands, forearms, face and neck upon each exit from the regulated area close to the point of exit and before engaging in other activities;

(ix) Air pressure in laboratory and animal rooms where 4-Dimethylaminobenzene is handled and blood studies are performed shall be negative in relation to the pressure in surrounding areas. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated.

(x) There shall be no connection between regulated areas and any other areas through the ventilation system.

(xi) A current inventory of 4-Dimethylaminobenzene shall be maintained.

(xii) Ventilated apparatus such as laboratory type hoods, shall be tested at least semi-annually or immediately after ventilation modification or maintenance operations, by personnel fully qualified to certify correct containment and operation.

(d) *General regulated area requirements.* (i) *Employee identification.* A daily roster of employees entering regulated areas shall be established and maintained. The rosters or a summary of the rosters, shall be retained for a period of 20 years. The rosters and summaries shall be provided upon request to authorized representatives of the Assistant Secretary and the Director. In the event that the employer ceases business without a successor, rosters shall be forwarded by registered mail to the Director.

(2) *Emergencies.* In an emergency, immediate measures including, but not limited to, the requirements of subdivisions (i), (ii), (iii), (iv), and (v) of this subparagraph shall be implemented. The potentially affected area shall be evacuated as soon as the emergency has been determined.

(ii) Hazardous conditions created by the emergency shall be eliminated; the potentially affected area shall be decontaminated prior to the resumption of normal operations.

(iii) Special medical surveillance physician shall be instituted with hours for employees present in the potentially affected area at the time of emergency. A report of the medical surveillance and any treatment shall be included in the incident report, in accordance with paragraph (f) (2) of this section.

(iv) Where an employee has a contact with 4-Dimethylaminobenzene, such employee shall be required to shower as soon as possible, unless contraindicated by physical injuries.

(v) An incident report on the emergency shall be reported as provided in paragraph (f) (2) of this section.

(3) *Hygiene facilities and practices.* Storage or consumption of food, &

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use of containers of beverages, storage, application of cosmetics, smoking, storage of smoking materials, tobacco products or other products for chewing, or the chewing of such products, are prohibited in regulated areas.

(ii) Where employees are required by this section to wash, washing facilities shall be provided in accordance with § 1910.141(d)(1) and (2)(ii) through (vii).

(iii) Where employees are required by this section to shower, shower facilities shall be provided in accordance with § 1910.141(d)(3).

(iv) Where employees wear protective clothing and equipment clean change rooms shall be provided, in accordance with § 1910.141(e), for the number of such employees required to change clothes.

(v) Where toilets are in regulated areas, such toilets shall be in a separate room.

(4) **Contamination control.** (i) Regulated areas, except for outdoor systems, shall be maintained under pressure negative with respect to nonregulated areas. Local exhaust ventilation may be used to satisfy this requirement. Clean makeup air in equal volume shall replace air removed.

(ii) Any equipment, material, or other item taken into or removed from a regulated area shall be done so in a manner that does not cause contamination in nonregulated areas or the external environment.

(iii) **Decontamination procedures** shall be established and implemented to remove 4-Dimethylaminoazobenzene from the surfaces of materials, equipment and the decontamination facility.

(iv) Dry sweeping and dry mopping are prohibited.

(e) **Signs, information and training—**
(1) **Signs.** (i) Entrances to regulated areas shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT

AUTHORIZED PERSONNEL ONLY

(ii) Entrances to regulated areas containing operations covered in paragraph (c)(5) of this section shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT EXPOSED IN THIS AREA

IMPERVIOUS SUIT INCLUDING GLOVES, BOOTS, AND AIR-SUPPLIED HOOD REQUIRED AT ALL TIMES

AUTHORIZED PERSONNEL ONLY

(iii) Appropriate signs and instructions shall be posted at the entrance to, and exit from, regulated areas, informing employees of the procedures that must be followed in entering and leaving a regulated area.

(2) **Container contents identification.** (i) Containers of 4-Dimethylaminoazobenzene and containers required under paragraphs (c)(4)(v) and (c)(6)(vii)(b), and (c)(6)(viii)(b) of this section which are accessible only to, and handled only by, authorized employees, or by other employees trained in accordance with subparagraph (5) of this paragraph, may have contents identification limited to a generic or proprietary name, or other proprietary identification, of the carcinogen and percent.

(ii) Containers of 4-Dimethylaminoazobenzene and containers required under paragraphs (c)(4)(v), (c)(6)(vii)(b), and (c)(6)(viii)(b) of this section which are accessible to, or handled by, employees or employees trained in accordance with subparagraph (5) of this paragraph shall have contents identification which includes the full chemical name and Chemical Abstracts Service Registry number as listed in paragraph (a)(1) of this section.

(iii) Containers shall have the warning words "CANCER-SUSPECT AGENT" displayed immediately under or adjacent to the contents identification.

(iv) Containers which have 4-Dimethylaminoazobenzene contents with corrosive or irritating properties shall have label statements warning of such hazards, noting, if appropriate, particularly sensitive or affected portions of the body.

(3) **Lettering.** Lettering on sign and instructions required by subparagraph (1) of this paragraph shall be a minimum letter height of 2 inches. Labels on containers required under this section shall not be less than 1/2 the size of the largest lettering on the package, and not less than 8 point type in any instance: *Provided*, That no such required lettering need be more than 1 inch in height.

(4) **Prohibited statements.** No statement shall appear on or near any required sign, label, or instruction, which contradicts or detracts from the effect of any required warning, information or instruction.

(5) **Training and indoctrination.** (i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to:

(a) The nature of the carcinogenic hazards of 4-Dimethylaminoazobenzene, including local and systemic toxicity;

(b) The specific nature of the operation involving 4-Dimethylaminoazobenzene which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of 4-Dimethylaminoazobenzene;

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and used in their application.

(iii) All materials relating to the program shall be provided upon request to authorized representatives of the Assistant Secretary and the Director.

(f) **Reports—**(1) **Operations.** Not later than March 1, 1974, the information required in subdivisions (i), (ii), (iii), and (iv) of this subparagraph shall be reported in writing to the nearest OSHA Area Director. Any changes in such information shall be similarly reported in writing within 15 calendar days of such change. (i) A brief description and implant location of the area(s) regulated and the address of each regulated area;

(ii) The name(s) and other identifying information as to the presence of 4-Dimethylaminoazobenzene in each regulated area;

(iii) The number of employees in each regulated area, during normal operations including maintenance activities; and

(iv) The manner in which 4-Dimethylaminoazobenzene is present in each regulated area; e.g. whether it is manufactured, processed, used, repackaged, released, stored, or otherwise handled.

(2) **Incidents.** Incidents which result in the release of 4-Dimethylaminoazobenzene into any area where employees may be potentially exposed shall be reported in accordance with this subparagraph.

(i) A report of the occurrence of the incident and the facts obtainable at that time including a report on any medical treatment of affected employees shall be made within 24 hours to the nearest OSHA Area Director.

(ii) A written report shall be filed with the nearest OSHA Area Director within 15 calendar days thereafter and shall include: (a) A specification of the amount of material released, the amount of time involved, and an explanation of the procedure used in determining this figure;

(b) A description of the area involved, and the extent of known and possible employee exposure and area contamination; and

(c) A report of any medical treatment of affected employees, and any medical surveillance program implemented; and

(d) An analysis of the circumstances of the incident, and measures taken or to be taken, with specific completion dates, to avoid further similar releases.

(g) **Medical surveillance.** At no cost to the employee, a program of medical surveillance shall be established and implemented for employees considered for assignment to enter regulated areas, and for authorized employees. (1) **Examinations.** (i) Before an employee is assigned to enter a regulated area, a preassignment physical examination by a physician shall be provided. The examination shall include the personal history of the employee, family and occupational background, including genetic and environmental factors.

(ii) Authorized employees shall be provided periodic physical examinations, less often than annually, following a preassignment examination.

(iii) In all physical examinations, examining physician shall consider whether there exist conditions of

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creased risk, including reduced immunological competence, those undergoing treatment with steroids or cytotoxic agents, pregnancy and cigarette smoking.

(2) **Records.** (i) Employers of employees examined pursuant to this paragraph shall cause to be maintained complete and accurate records of all such medical examinations. Records shall be maintained for the duration of the employee's employment. Upon termination of the employee's employment, including retirement or death, or in the event that the employer ceases business without a successor, records, or notarized true copies thereof, shall be forwarded by registered mail to the Director.

(ii) Records required by this paragraph shall be provided upon request to authorized representatives of the Assistant Secretary or the Director; and upon request of an employee or former employee, to a physician designated by the employee or to a new employer.

(iii) Any physician who conducts a medical examination required by this paragraph shall furnish to the employer a statement of the employee's suitability for employment in the specific exposure.

§ 1910.93a N-Nitrosodimethylamine.

(a) **Scope and application.** (1) This section applies to any area in which N-Nitrosodimethylamine, Chemical Abstracts Service Registry Number 62759 is manufactured, processed, repackaged, released, handled, or stored, but shall not apply to trans-shipment in sealed containers, except for the labeling requirements under paragraphs (c) (2), (3), and (4) of this section.

(2) This section shall not apply to solid or liquid mixtures containing less than 1.0% by weight or volume of N-Nitrosodimethylamine.

(b) **Definitions.** For the purposes of this section: (1) "Absolute filter" is one capable of retaining 99.97 percent of a mono disperse aerosol of 0.3 μ m particles.

(2) "Authorized employee" means an employee whose duties require him to be in the regulated area and who has been specifically assigned by the employer.

(3) "Clean change room" means a room where employees put on clean clothing and/or protective equipment in an environment free of N-Nitrosodimethylamine. The clean change room shall be contiguous to and have an entry from a shower room, when the shower room facilities are otherwise required in this section.

(4) "Closed system" means an operation involving N-Nitrosodimethylamine where containment prevents the release of N-Nitrosodimethylamine into regulated areas, nonregulated areas, or the external environment.

(5) "Decontamination" means the inactivation of N-Nitrosodimethylamine or its safe disposal.

(6) "Director" means the Director, National Institute for Occupational Safety and Health, or any person directed by him or the Secretary of Health, Education, and Welfare to act for the Director.

(7) "Disposal" means the safe removal of N-Nitrosodimethylamine from the work environment.

(8) "Emergency" means an unforeseen circumstance or set of circumstances resulting in the release of N-Nitrosodimethylamine which may result in exposure to or contact with N-Nitrosodimethylamine.

(9) "External environment" means any environment external to regulated and nonregulated areas.

(10) "Isolated system" means a fully enclosed structure other than the vessel of containment of N-Nitrosodimethylamine, which is impervious to the passage of N-Nitrosodimethylamine, and which would prevent the entry of N-Nitrosodimethylamine into regulated areas, nonregulated areas, or the external environment, should leakage or spillage from the vessel of containment occur.

(11) "Laboratory type hood" is a device enclosed on three sides and the top and bottom, designed and maintained so as to draw air inward at an average linear face velocity of 150 feet per minute with a minimum of 125 feet per minute; designed, constructed, and maintained in such a way that an operation involving N-Nitrosodimethylamine within the hood does not require the insertion of any portion of any employee's body other than his hands and arms.

(12) "Nonregulated area" means any area under the control of the employer where entry and exit is neither restricted nor controlled.

(13) "Open-vessel system" means an operation involving N-Nitrosodimethylamine in an open vessel, which is not in an isolated system, a laboratory type hood, nor in any other system affording equivalent protection against the entry of N-Nitrosodimethylamine into regulated areas, nonregulated areas, or the external environment.

(14) "Protective clothing" means clothing designed to protect an employee against contact with or exposure to N-Nitrosodimethylamine.

(15) "Regulated area" means an area where entry and exit is restricted and controlled.

(c) **Requirements for areas containing N-Nitrosodimethylamine.** A regulated area shall be established by an employer where N-Nitrosodimethylamine is manufactured, processed, used, repackaged, released, handled or stored. All such areas shall be controlled in accordance with the requirements for the following category or categories describing the operation involved: (1) *Isolated systems.* Employees working with N-Nitrosodimethylamine within an isolated system, such as a "glove box" shall wash their hands and arms upon completion of the assigned task and before engaging in other activities not associated with the isolated system.

(2) *Closed system operation.* Within regulated areas where N-Nitrosodimethylamine is stored in sealed containers, or contained in a closed system, including piping systems, with any sample ports or openings closed while N-Nitro-

sodimethylamine is contained within: Access shall be restricted to authorized employees only.

(ii) Employees shall be required wash hands, forearms, face and neck upon each exit from the regulated area close to the point of exit and before engaging in other activities.

(3) *Open vessel system operation.* Open vessel system operations as defined in paragraph (b) (15) of this section are prohibited.

(4) *Transfer from a closed system.* charging or discharging point operation or otherwise opening a closed system in operations involving "laboratory type hoods," or in locations where N-Nitrosodimethylamine is contained in an otherwise "closed system," but is transferred, charged, or discharged into other normally closed containers, the provisions of this subparagraph shall apply. (i) Access shall be restricted to authorized employees only.

(ii) Each operation shall be provided with continuous local exhaust ventilation so that air movement is always in ordinary work areas to the operation. Exhaust air shall not be discharged into regulated areas, nonregulated areas, or the external environment unless decontaminated. Clean makeup air shall be introduced in sufficient volume to maintain the correct operation of the local exhaust system.

(iii) Employees shall be provided with and required to wear, clean, full body protective clothing (smocks, coveralls, long-sleeved shirt and pants), shoe covers, and gloves prior to entering a regulated area.

(iv) Employees engaged in N-Nitrosodimethylamine handling operations shall be provided with and required wear and use a half-face, filter-type respirator for dusts, mists, and fumes, in accordance with § 1910.134. A respirator affording higher levels of protection may be substituted.

(v) Prior to each exit from a regulated area, employees shall be required remove and leave protective clothing and equipment at the point of exit and at last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified, as required under paragraphs (c) (2), (3), and (4) of this section.

(vi) Employees shall be required wash hands, forearms, face and neck each exit from the regulated area, close to the point of exit, and before engaging in other activities.

(vii) Employees shall be required shower after the last exit of the day.

(viii) Drinking fountains are prohibited in the regulated area.

(5) *Maintenance and decontamination activities.* In cleanup of leaks or maintenance or repair operations on contaminated systems or equipment, direct contact with N-Nitrosodimethylamine could result, each authorized employee entering that area shall be provided with and required to wear

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impervious garments, including gloves, boots and continuous-air supplied hood in accordance with § 1910.134.

(ii) Be decontaminated before removing the protective garments and hood;

(iii) Be required to shower upon removing the protective garments and hood.

(6) **Laboratory activities.** The requirements of this subparagraph shall apply to research and quality control activities involving the use of N-Nitrosodimethylamine. (i) Mechanical pipetting aids shall be used for all pipetting procedures.

(ii) Experiments, procedures and equipment which could produce aerosols shall be confined to laboratory-type hoods or glove boxes.

(iii) Surfaces on which N-Nitrosodimethylamine is handled shall be protected from contamination.

(iv) Contaminated wastes and animal carcasses shall be collected in impervious containers which are closed and decontaminated prior to removal from the work area. Such wastes and carcasses shall be incinerated in such a manner that no carcinogenic products are released.

(v) All other forms of N-Nitrosodimethylamine shall be inactivated prior to disposal.

(vi) Laboratory vacuum systems shall be protected with high-efficiency scrubbers or with disposable absolute filters.

(vii) Employees engaged in animal support activities shall be (a) provided with, and required to wear, a complete protective clothing change, clean each day, including coveralls or pants and shirt, foot covers, head covers, gloves, and appropriate respiratory protective equipment or devices; and

(b) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified as required under paragraphs (c) (2), (3), and (4) of this section.

(c) Required to wash hands, forearms, face and neck upon each exit from the regulated area close to the point of exit, and before engaging in other activities; and

(d) Required to shower after the last exit of the day.

(viii) Employees, other than those engaged only in animal support activities, each day shall be (a) provided with and required to wear a clean change of appropriate laboratory clothing, such as a solid front gown, surgical scrub suit, or fully buttoned laboratory coat.

(b) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers

shall be identified as required under paragraphs (c) (2), (3), and (4) of this section.

(c) Required to wash hands, forearms, face and neck upon each exit from the regulated area close to the point of exit, and before engaging in other activities.

(ix) Air pressure in laboratory areas and animal rooms where N-Nitrosodimethylamine is handled and bioassay studies are performed shall be negative in relation to the pressure in surrounding areas. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated.

(x) There shall be no connection between regulated areas and any other areas through the ventilation system.

(xi) A current inventory of N-Nitrosodimethylamine shall be maintained.

(xii) Ventilated apparatus such as laboratory type hoods, shall be tested at least semi-annually or immediately after ventilation modification or maintenance operations, by personnel fully qualified to certify correct containment and operation.

(d) **General regulated area requirements.** (1) **Employee identification.** A daily roster of employees entering regulated areas shall be established and maintained. The rosters or a summary of the rosters shall be retained for a period of 20 years. The rosters and/or summaries shall be provided upon request to authorized representatives of the Assistant Secretary and the Director. In the event that the employer ceases business without a successor, rosters shall be forwarded by registered mail to the Director.

(2) **Emergencies.** In an emergency, immediate measures including, but not limited to, the requirements of subdivisions (1), (11), (111), (iv), and (v) of this subparagraph shall be implemented. (i) The potentially affected area shall be evacuated as soon as the emergency has been determined.

(ii) Hazardous conditions created by the emergency shall be eliminated and the potentially affected area shall be decontaminated prior to the resumption of normal operations.

(iii) Special medical surveillance by a physician shall be instituted within 24 hours for employees present in the potentially affected area at the time of the emergency. A report of the medical surveillance and any treatment shall be included in the incident report, in accordance with paragraph (f) (2) of this section.

(iv) Where an employee has a known contact with N-Nitrosodimethylamine, such employee shall be required to show or as soon as possible, unless contraindicated by physical injuries.

(v) An incident report on the emergency shall be reported as provided in paragraph (f) (2) of this section.

(3) **Hygiene facilities and practices.**

(i) Storage or consumption of food, storage or use of containers of beverages, storage or application of cosmetics, smoking, storage of smoking materials, tobacco products or other products for chewing, or the chewing of such products, are prohibited in regulated areas.

(ii) Where employees are required by this section to wash, washing facilities shall be provided in accordance with § 1910.141(d) (1) and (2) (ii) through (vii).

(iii) Where employees are required by this section to shower, shower facilities shall be provided in accordance with § 1910.141(d) (3).

(iv) Where employees wear protective clothing and equipment clean change rooms shall be provided, in accordance with § 1910.141(e), for the number of such employees required to change clothes.

(v) Where toilets are in regulated areas, such toilets shall be in a separate room.

(4) **Contamination control.** (i) Regulated areas, except for outdoor systems, shall be maintained under pressure negative with respect to nonregulated areas. Local exhaust ventilation may be used to satisfy this requirement. Clean make-up air in equal volume shall replace air removed.

(ii) Any equipment, material, or other item taken into or removed from a regulated area shall be done so in a manner that does not cause contamination in nonregulated areas or the external environment.

(iii) Decontamination procedures shall be established and implemented to remove N-Nitrosodimethylamine from the surfaces of materials, equipment and the decontamination facility.

(iv) Dry sweeping and dry mopping are prohibited.

(e) **Signs, information and training.** (1) **Signs.** (i) Entrances to regulated areas shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT

AUTHORIZED PERSONNEL ONLY

(ii) Entrances to regulated areas containing operations covered in paragraph (c) (5) of this section shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT EXPOSED IN THIS AREA

IMPERVIOUS SUIT INCLUDING GLOVES, BOOTS, AND AIR-SUPPLIED HOOD REQUIRED AT ALL TIMES

AUTHORIZED PERSONNEL ONLY

(iii) Appropriate signs and instructions shall be posted at the entrance to, and exit from, regulated areas, informing employees of the procedures that must be followed in entering and leaving a regulated area.

(2) **Container contents identification.**

(i) Containers of N-Nitrosodimethylamine and containers required under paragraphs (c) (4) (v) and (c) (6) (vii) (b), and (c) (6) (viii) (b) of this section which are accessible only to, and handled only by, authorized employees, or by other employees trained in accordance with subparagraph (5) of this paragraph, may have contents identification limited to a generic or proprietary name, or other proprietary identification, of the carcinogen and percent.

RULES AND REGULATIONS

(ii) Containers of N-Nitrosodimethylamine and containers required under paragraphs (c)(4)(v), (c)(6)(vi)(b), and (c)(6)(vii)(b) of this section which are accessible to, or handled by employees other than authorized employees or employees trained in accordance with subparagraph (5) of this paragraph shall have contents identification which includes the full chemical name and Chemical Abstracts Service Registry number as listed in paragraph (a)(1) of this section.

(iii) Containers shall have the warning words "CANCER-SUSPECT AGENT" displayed immediately under or adjacent to the contents identification.

(iv) Containers which have N-Nitrosodimethylamine contents with corrosive or irritating properties shall have label statements warning of such hazards, noting, if appropriate, particularly sensitive or affected portions of the body.

(3) **Lettering.** Lettering on signs and instructions required by subparagraph (1) of this paragraph shall be a minimum letter height of 2 inches. Labels on containers required under this section shall not be less than 1/2 the size of the largest lettering on the package, and not less than 8 point type in any instance. *Provided*, That no such required lettering need be more than 1 inch in height.

(4) **Prohibited statements.** No statement shall appear on or near any required sign, label, or instruction which contradicts or detracts from the effect of any required warning, information or instruction.

(5) **Training and indoctrination.** (i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to:

(a) The nature of the carcinogenic hazards of N-Nitrosodimethylamine, including local and systemic toxicity;

(b) The specific nature of the operation involving N-Nitrosodimethylamine which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, method of self-examination;

(d) The purpose of and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of N-Nitrosodimethylamine;

(h) The purpose for and application of specific first aid procedures and practices.

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

(iii) All materials relating to the program shall be provided upon request to

authorized representatives of the Assistant Secretary and the Director.

(f) **Reports.** (1) **Operations.** Not later than March 1, 1974, the information required in subdivisions (i), (ii), (iii), and (iv) of this paragraph shall be reported in writing to the nearest OSHA Area Director. Any changes in such information shall be similarly reported in writing within 15 calendar days of such change. (i) A brief description and in-plant location of the area(s) regulated and the address of each regulated area;

(ii) The names(s) and other identifying information as to the presence of N-Nitrosodimethylamine in each regulated area;

(iii) The number of employees in each regulated area, during normal operations including maintenance activities; and

(iv) The manner in which N-Nitrosodimethylamine is present in each regulated area; e.g. whether it is manufactured, processed, used, repackaged, released, stored, or otherwise handled.

(2) **Incidents.** Incidents which result in the release of N-Nitrosodimethylamine into any area where employees may be potentially exposed shall be reported in accordance with this subparagraph.

(i) A report of the occurrence of the incident and the facts obtainable at that time including a report on any medical treatment of affected employees shall be made within 24 hours to the nearest OSHA Area Director.

(ii) A written report shall be filed with the nearest OSHA Area Director within 15 calendar days thereafter and shall include: (a) A specification of the amount of material released, the amount of time involved, and an explanation of the procedure used in determining this figure;

(b) A description of the area involved, and the extent of known and possible employee exposure and area contamination; and

(c) A report of any medical treatment of affected employees, and any medical surveillance program implemented; and

(d) An analysis of the circumstances of the incident, and measures taken or to be taken, with specific completion dates, to avoid further similar releases.

(g) **Medical surveillance.** At no cost to the employee, a program of medical surveillance shall be established and implemented for employees considered for assignment to enter regulated areas, and for authorized employees. (1) **Examinations.** (i) Before an employee is assigned to enter a regulated area, a preassignment physical examination by a physician shall be provided. The examination shall include the personal history of the employee, family and occupational background, including genetic and environmental factors.

(ii) Authorized employees shall be provided periodic physical examinations, not less often than annually, following the preassignment examination.

(iii) In all physical examinations, the examining physician shall consider whether there exist conditions of increased risk, including reduced immunological competence, those undergoing treatment with steroids or cytotoxic agents, pregnancy and cigarette smoking.

(2) **Records.** (i) Employers of employees examined pursuant to this paragraph shall cause to be maintained complete and accurate records of all medical examinations. Records shall be maintained for the duration of the employee's employment. Upon termination of an employee's employment, including retirement or death, or in the event the employer ceases business without successor, records, or notarized copies thereof, shall be forwarded by registered mail to the Director.

(ii) Records required by this paragraph shall be provided upon request to authorized representatives of the Assistant Secretary or the Director, upon request of an employee or former employee, to a physician designated by the employee or to a new employer.

(iii) Any physician who conducts medical examination required by this paragraph shall furnish to the employer a statement of the employee's suitability for employment in the specific exposure § 1910.93q Vinyl chloride.

(a) **Scope and application.** (1) This section applies to any area or operation in which vinyl chloride (chloroethene, Chemical Abstracts Service Registry Number 75015, is manufactured, released, handled, processed, released, repackaged or stored.

(2) This section does not apply to handling, storage, or other use of vinyl chloride polymers and copolymers in form of fabricated products.

(b) **Permissible exposure.** The occupational environment shall be controlled so that no employee is exposed to vinyl chloride at a concentration in excess of 50 parts per million (ppm) (5 mg/cum).

(c) **Monitoring.** (1) **Initial monitoring.** As soon as possible but not later April 22, 1974, every employer of an employee working in an area or operation in which vinyl chloride is manufactured, handled, processed, released, repackaged, or stored shall begin monitoring the ambient air of the area to determine whether it contains vinyl chloride concentrations in excess of 50 ppm.

(2) **Frequency.** Monitoring of a sufficient number of employees so that representative sample of exposure to vinyl chloride may be determined shall be accomplished not less frequently than weekly until all results for three consecutive weeks are at or below 50 ppm. After, monitoring shall be conducted less frequently than monthly so the concentrations of vinyl chloride not exceed 50 ppm. If a monitoring sample reveals vinyl chloride concentrations in excess of 50 ppm, weekly monitoring shall be resumed until all for three consecutive weeks are at or below 50 ppm.

(3) **Method of monitoring.** Monitoring shall be accomplished by collecting samples by suitable device by the employee. The samples analyzed by gas chromatography or any other method which is of equivalent sensitivity. The analytical method shall be sensitive to 5 ppm of vinyl chloride in air with an accuracy of 10 percent for a ten minute air sample.

Chapter XVII—Occupational Safety and Health Admin.

§ 1911.18

§ 1911.18 Decision.

(b) Any rule or standard adopted under paragraph (a) of this section shall incorporate a concise general statement of its basis and purpose. The statement is not required to include specific and detailed findings and conclusions of the kind customarily associated with formal proceedings. However, the statement will show the significant issues which have been faced, and will articulate the rationale for their solution.

BOR 004465

§ 172.5

Title 49—Transportation

§ 172.5. List of hazardous materials.

(a) For explanation of signs and abbreviations see § 172.4.

Article	Classed as	Exemptions and packing (see sec.)	Label required if not exempt	Maximum quantity in 1 outside container by rail express
Vinyl chloride.....	F. C. G.....	173.304, 173.301, 173.314, 173.315	F. G.....	300 pounds.
Vinylidene chloride, inhibited.....	F. L.....	173.118, 173.119	F. L.....	10 gallons.
Vinyl fluoride inhibited.....	F. C. G.....	173.304, 173.301, 173.314, 173.315	F. G.....	300 pounds.
Vinyl methyl ether, inhibited.....	F. C. G.....	173.304, 173.301, 173.314	F. G.....	20 pounds.
Vinyl trichloroethane.....	F. L.....	No exemption, 173.135	F. L.....	10 gallons.
War heads. See Explosive projectiles.				
Waste paper, wet.....	F. S.....	No exemption, 173.185	F. S.....	Not accepted.
Waste textile, wet.....	F. S.....	No exemption, 173.211	F. S.....	Not accepted.
Waste wool, wet.....	F. S.....	No exemption, 173.213	F. S.....	Not accepted.
Water treatment compound, liquid.....	Cor.....	173.211, 173.219	Corrosive.....	10 gallons.
Weed killing compounds, liquid. See *Compounds, tree or weed killing, liquid.				
Wet hair. See Hair wet.				
Wet nitrocellulose, colloidal, granular or flake—20 percent alcohol or solvent; or block—25 percent alcohol.	F. L.....	173.118, 173.127	F. L.....	25 pounds.
Wet nitrocellulose, colloidal, granular or flake—20 percent water.	F. S.....	173.153, 173.154	F. S.....	100 pounds.
Wet nitrocellulose—50 percent alcohol or solvent.	F. L.....	173.118, 173.127	F. L.....	25 pounds.
Wet nitrocellulose—20 percent water.	F. S.....	173.153, 173.154	F. S.....	100 pounds.
Wet nitrocellulose flakes—20 percent alcohol or solvent.	F. L.....	173.118, 173.127	F. L.....	25 pounds.
Wet nitroguanidine—20 percent water.	F. S.....	173.153, 173.154	F. S.....	100 pounds.
Wet nitrostarch—20 percent water.	F. S.....	173.153, 173.154	F. S.....	100 pounds.
Wet nitrostarch—30 percent alcohol or solvent.	F. L.....	173.118, 173.127	F. L.....	25 pounds.
Wet paper stock. See Paper stock, wet.				
Wet rags. See Rags, wet.				
Wet textile waste. See Waste textile, wet.				
Wet waste paper. See Waste paper, wet.				
Wet waste wool. See Waste wool, wet.				
Wood alcohol (methanol, methyl alcohol).	F. L.....	173.118, 173.125	F. L.....	10 gallons.
*Wood filler. See *Paint, enamel, lacquer, stain, shellac, varnish, etc.				
*Wood polish. See *Polishes, metal, stove, furniture and wood, liquid.				
*Wood stain, liquid. See *Paint, enamel, lacquer, stain, shellac, varnish, etc.				
Wool waste, wet. See Waste wool, wet.				
X-ray film (nitrocellulose base).....	F. S.....	No exemption, 173.177	F. S.....	200 pounds.
X-ray film (silon-burning).....	See § 173.151 (a)(1).			
X-ray film scrap (nitrocellulose base), samples of.....	F. S.....	No exemption, 173.196	F. S.....	25 pounds.
X-ray film scrap (nitrocellulose base), other than samples.	F. S.....	No exemption, 173.195	F. S.....	Not accepted.
X-ray film scrap (silon-burning).....	See § 173.151 (a)(2).			
X-ray film, unexposed (nitrocellulose base).....	F. S.....	173.180	F. S.....	250 pounds.
*Xylol (Xylene).....	F. L.....	173.118, 173.119	F. L.....	10 gallons.
Xylol bromide.....	Irr.....	No exemption, 173.302	Irritant.....	75 pounds.
Zinc ammonium nitrate.....	Oxy. M.....	No exemption, 173.228	Oxy.....	100 pounds.
Zinc arsenite.....	Pols. B.....	173.304, 173.305	Pols.....	250 pounds.
Zinc arsenate, solid.....	Pols. B.....	173.304, 173.305	Pols.....	250 pounds.
Zinc chloride.....	Oxy. M.....	173.153, 173.154	Oxy.....	100 pounds.
Zinc cyanide.....	See § 173.370.			
Zinc ethyl. See Pyroforic liquids, n.o.s.				
Zinc nitrate. See Nitrates, n.o.s.				
Zinc permanganate.....	Oxy. M.....	173.153, 173.154	Oxy.....	100 pounds.
Zinc peroxide.....	Oxy. M.....	173.153, 173.154	Oxy.....	100 pounds.

§ 173.402

Title 49.—Transportation

§ 173.402 Labeling hazardous material.

(a) Except as otherwise provided in this part, no person may offer for transportation a package containing a hazardous material unless that package is conspicuously labeled in accordance with the following:

(3) For a flammable compressed gas, a "Flammable gas" label as described in § 173.407.

§ 173.401 Labels.

(a) Shippers must furnish and attach the labels prescribed for their packages. Labels should be applied to that part of the package bearing consignee's name and address.

(b) Labels must not be applied to a package containing only material which is not subject to Parts 170-189 of this subchapter or which is exempted therefrom. However, this paragraph does not prohibit the use of labels required for purposes of import or export shipments or required by 11 CFR 103.13 of the Federal Aviation Regulations on packages destined for transportation by air.

(c) Shippers must not use labels which by their size, shape, and color, may readily be confused with the standard caution labels prescribed in this part.

(d) Except as otherwise provided in this part, each label must be diamond shape with each side at least 4 inches long and have a solid line border at least 3.5 inches long on each side. The specifications for colors in Appendix A to this part should be followed for the colors prescribed in §§ 173.405 through 173.422.

(e) Form identification information (including name of supplier) may be printed on a label, in type not larger than 10 point, if it is placed outside of the solid line border of the label.

(f) For import shipments only, labels affixed to packages in another country having the same size, symbols, and color as prescribed in these regulations are authorized in place of the labels prescribed herein. They may contain inscriptions required by the country of origin.

(g) A label may be over stamped or overprinted with the appropriate hazard

class numeral as listed in § 172.4 of this subchapter. The number should be black, at least 0.25 inch in height, and must be located in the bottom corner of the label.

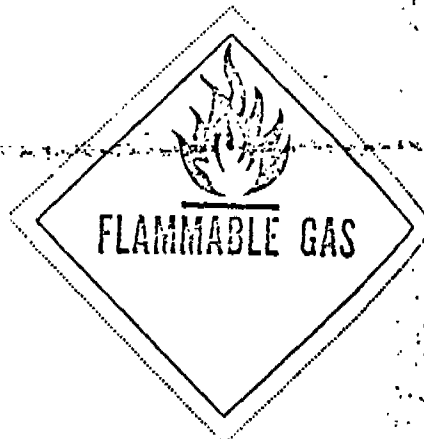
Note: The display of the class number on labels is required by some foreign governments.

(h) Labels required by the regulations immediately prior to January 1, 1974, may be used until January 1, 1975. This provision does not apply to the required use of labels for explosives.

[29 P.R. 18767, Dec. 29, 1964, as amended by Amdt. 173-70, 38 FR 5310, Feb. 27, 1973]

§ 173.407 Flammable gas label.

(a) Each "Flammable gas" label except for size and color must be as shown:



(1) In addition to the requirements of § 173.404, each label must be red, with the inscription, border, and symbol black. [Amdt. 173-70, 38 FR 5311, Feb. 27, 1973]

Note: The amendments appearing at 37 FR 5947, March 23, 1972 were designated effective December 31, 1972. At 38 FR 12807, May 11, 1973, the effective date was postponed to December 31, 1973.

UNITED STATES DEPARTMENT OF LABOR

Occupational Safety and Health Administration

In the Matter of:

PERMANENT OCCUPATIONAL SAFETY
AND HEALTH STANDARD FOR
EXPOSURE TO VINYL CHLORIDE

) Title 29, Code of Federal
) Regulations, §1910.93g,
) Vinyl chloride.
)
)

Petition for Stay of Effective
Date of Standard

The Society of the Plastics Industry, Inc. (SPI), ^{1/}
by its attorneys, hereby petitions the Assistant Secretary
of Labor for Occupational Safety and Health to stay the
recently promulgated standard for occupational exposure to
vinyl chloride, 29 C.F.R. §1910.93g (39 Fed. Reg. 35890,
October 4, 1974).

^{1/} The Society of the Plastics Industry, Inc. is a corporation organized under the Not-for-Profit Corporation Law of the State of New York. It is composed of approximately 1,400 member companies and individuals who supply raw materials; process or manufacture plastics or plastics products; engineer or construct molds or similar accessory equipment for the plastics industry; and engage in the manufacture of machinery used to make plastics products for materials of all types. The Society is the major national trade association of the plastics industry; its membership is responsible for an estimated 75% of the total dollar volume of sales of plastics in this country. It is through the SPI Vinyl Chloride Monomer and Polyvinyl Chloride Resin Producers Committee, an operating unit of SPI, that the plastics industry has coordinated its participation in the rulemaking proceedings concerning occupational exposure to vinyl chloride. As such, therefore, the SPI has a direct interest in this matter in its capacity as designated representative of the affected employers.

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The primary ground for requesting this relief is, as set out in more detail in the attached Affidavit of Jerome H. Heckman, Esq., that the respiratory protection requirements of the standard are beyond the compliance capabilities of the industry. Firstly, the permitted equipment is not available in sufficient supply now nor will it be on January 1, 1975 or in the immediate future. Secondly, not only is much of the respiratory protective equipment specified for use under the Standard not as yet approved for the specified uses, but, on the basis of the attached memoranda from the Acting Director of the NIOSH Office of Research and Standards Development to the Acting Director of NIOSH dated October 18, 1974 and from the Acting Director of NIOSH to the Director of the OSHA Office of Standards, it is anticipated that such yet to be approved respiratory protective equipment will not be approved by January 1, 1975. Thirdly, a sufficient supply of such equipment cannot, even with all appropriate approvals, be made available in sufficient time for the industry to comply with the standard by its present effective date.

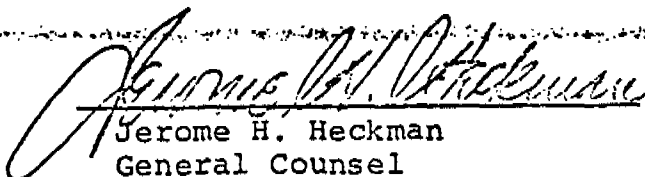
Failure to grant the requested relief would force large segments of the vinyl chloride monomer and polyvinyl chloride resin industry to cease manufacturing operations after December 31, 1974.

BOR 004469

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WHEREFORE, IT IS RESPECTFULLY REQUESTED that the Secretary expeditiously grant the relief requested herein, to wit: stay the effective date of that portion of the standard due to become effective January 1, 1975; and continue the aforementioned stay in effect until such time as sufficient quantities of approved respiratory protective equipment are available to the industry, or until a court determines that compliance with the relevant portions of the standard is not required.

Respectfully submitted,


Jerome H. Heckman
General Counsel

THE SOCIETY OF THE PLASTICS
INDUSTRY, INC.

Of Counsel:

Keller and Heckman
1150 17th Street, N.W.
Suite 1000
Washington, D.C. 20036
Telephone: (202) 296-2700

DATE: November 5, 1974

BOR 004470

AFFIDAVIT

City of Washington)

ss:

District of Columbia)

I, Jerome H. Heckman, of Washington, D.C., attorney for The Society of the Plastics Industry, Inc. (SPI), being first duly sworn, do depose and say as follows:

1. I am an attorney at law, a partner in the Washington, D.C. law firm of Keller and Heckman and am General Counsel to The Society of the Plastics Industry, Inc. In that capacity, I have and continue to represent the Society and its members in matters with regard to the Department of Labor's Occupational Safety and Health Administration standard setting proceedings in the matter of occupational exposure to vinyl chloride.

2. I have reviewed the recently promulgated occupational exposure standard for vinyl chloride, 29 C.F.R. §1910.93q, published in the Federal Register on Friday, October 4, 1974 at page 35890 et seq. Based on knowledge, information, and belief acquired by receiving information from companies in the industry, I further state that, with regard to the aforementioned standard for occupational exposure to vinyl chloride, it will be impossible for the affected industry to comply with the Standard, especially

- 2 -

the section entitled "(g) Respiratory protection" thereof (29 C.F.R. 1910.93q(g)) and that, therefore, unless appropriate relief is granted, a substantial number of vinyl chloride and polyvinyl chloride manufacturers in the United States will have to cease manufacturing and production operations after December 31, 1974. Likewise, many processors, fabricators and others covered by the Standard and requiring respiratory protective equipment will have to cease operations after December 31, 1974.

3. The specific nature of the requirements in the Standard, that is, the fact that every employee in every segment of the industry exposed to concentrations of vinyl chloride in excess of the permissible levels of 1 part per million (ppm) averaged over any eight hour period and 5 ppm averaged over any period not exceeding 15 minutes must be supplied with an appropriate respiratory protective device as set out in the Standard, suggested that insufficient quantities of the prescribed respiratory protective equipment would be available in sufficient time to enable the industry to comply with the requirements of the Standard.

4. Following up on this, by telephone, we contacted individual VCM and PVC industry members covered by the Standard to determine the types and quantities of respiratory protective devices they would have to obtain in order to

comply with the Standard's requirements. The specific figures requested and obtained covered equipment required, whether on order or not, which equipment would have to be obtained and installed or otherwise on hand in order to continue manufacturing operations on and after the effective date of the Standard, January 1, 1975.

5. Similarly, by telephone, we inquired directly of all known suppliers of the respiratory equipment listed in this Standard to ascertain whether these suppliers could, disregarding outstanding and unfilled orders, supply the necessary respiratory protective equipment to the industry by January 1, 1975.

6. Comparing gross available supply with gross demand, we have determined that, even under the best of circumstances and assuming the timely approval of eligible equipment specifically permitted under the Standard, the gross demand is considerably in excess of the supply for the equipment required.

7. The specifics of the supply and demand situations, as very conservatively projected from the data gathered, are as follows: 1/

1/ The information in this survey was gathered by Counsel on a company confidential reporting basis so as to avoid any possibility of adverse antitrust considerations. Therefore, the detailed background data, affidavits and the like are not being made available herewith, it being assumed that the data and information reported herein can be easily verified by the Department of Labor and the Occupational Safety and Health Administration.

- 4 -

(a) For atmospheric concentrations of vinyl chloride that are unknown or above 3,600 ppm, the demand of the vinyl chloride monomer and polyvinyl chloride resin manufacturers is for 429 of the prescribed units with 1,072 air bottles. Current available supply is 3,325 units and 6,000 refills. The lag time for supply of additional units is in the range of 30 to 60 months.

(b) For vinyl chloride concentrations not in excess of 3,600 ppm, there is a total demand of 3,186 complete units. The suppliers indicate that neither of the devices specified is available. As to the combination type C supplied air respiratory, pressure demand type, only a prototype model exists as of this time but it has not been approved by NIOSH and, even if it were, no estimates could be obtained as to when this device would be commercially available. As to the type C, supplied air respirator continuous flow type, the suppliers of this equipment have informed us that NIOSH has refused to authorize the currently available equipment for use by this industry because the continuous air flow rate is insufficient.

BOR 004474

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(c) For vinyl chloride concentrations not in excess of 100 ppm, the demand is for 614 devices of any permitted type. The suppliers report that this demand cannot be met. The demand type supplied air respirator supply picture is the same as that reported in subparagraph (b) above for the pressure demand type supplied air respirators. The same is true of the open circuit self-contained breathing apparatus discussed in subparagraph (a) above except that these devices permitted for less than 100 ppm are demand type rather than pressure demand type. One supplier informed us that an unknown quantity of demand type self-contained devices would become available at some unspecified time during the first half of 1975. As to the demand type supplied air respirators, commercially available devices of this nature are not currently NIOSH approved. However, if approval could be expeditiously obtained, approximately 500 units could be supplied by the first of the year with a lead time of eight months from the time of NIOSH approval and the filing of purchase orders for additional units.

BOR 004475

- 6 -

(d) For vinyl chloride concentrations not in excess of 25 ppm, demand for either unit permitted is 5,478 units with 108,397 refills. The suppliers report that the powered air purifying respirator with hood does not exist. Canister gas masks, not yet approved by NIOSH, are available. Approximately 3,000 units and an unknown number of replacement canisters are currently available with a potential canister replacement production of 30,000 units per month beginning after January 1, 1975.

(e) For vinyl chloride concentrations not in excess of 10 ppm, the demand for any permitted device is 2,940 units and 556,500 replacement cartridges as appropriate. The supply for the demand type supplied air respirators permitted is the same as reported in subparagraph (c) above. Chemical cartridge type respirators are available but have yet to be NIOSH approved. With NIOSH approval, suppliers indicate that 3,000 units and an unknown quantity of replacement cartridges are currently available and that potential replacement cartridge

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manufacture rates after January 1, 1975 are

in the range of 200,000 units per month.

From the foregoing it is obvious that the demand for respiratory protective devices exceeds both current available supply and the supply were all NIOSH approvals granted. The industry requires approximately 12,650 respiratory protective devices on hand and operable by January 1, 1975 since a major portion of the respiratory protective devices on hand in industry are not of the type permitted in the new Standard and the Standard's very low permissible exposure limits combined with the very

~~broad definition of regulated area has caused an expansion in~~
the number of personnel who must be supplied with respiratory protective equipment. Other regulations and guidelines, both federal and state, will further increase the already high demand.

The available supply of respirators of all types is low because NIOSH approvals for certain types of equipment are lacking or have been withdrawn. Additionally, since the specific requirements of the Standard were not known until October 4, 1974, suppliers have not yet had an opportunity to plan and begin production of the appropriate equipment. In any case, total available supply at this time is 3,325 units. With NIOSH approval of all permitted systems listed

BOR 004477

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in the Standard available supply would still only be 9,825 units.

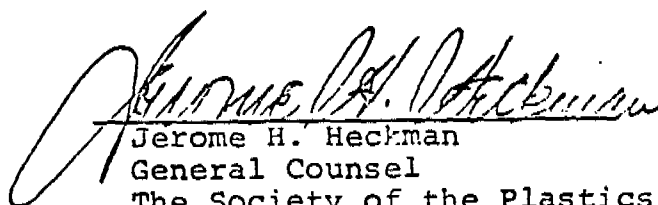
In short, the current available supply is only 26% of current demand with optimum supply (expeditious NIOSH approvals) being only 78% of current demand. Without appropriate NIOSH approvals the industry is a minimum of 22% and a maximum of 74% short of the respiratory protective devices mandated by the Standard.

These figures have been developed solely from the demand existing in the vinyl chloride monomer and polyvinyl chloride resin segments of the industry. The potential of additional demand being created by processors, fabricators and other elements of the industry could not be calculated and factored in to this survey. Nonetheless, it is patently obvious that any increase in demand from other segments of the industry will enlarge the gap between supply and demand.

In light of the foregoing facts we have concluded that, because the supply for respiratory protective devices is so short, there is no likelihood that, even given NIOSH approvals and the most equitable apportionment of the available supply, all the closely interrelated and interdependent segments of this industry could legally continue manufacturing operations after December 31, 1974. An interruption in the

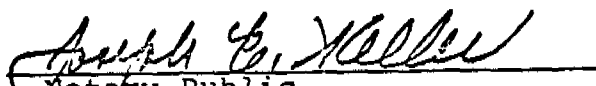
- 9 -

manufacturing abilities of raw materials suppliers, or the semi-finished products consumers and suppliers would have such a significant impact on the other elements of the industry that no portion of the industry, even if it were itself able to meet all requirements of the Standard, could continue in operation because either the raw materials supply or the markets would cease to function.


Jerome H. Heckman
General Counsel
The Society of the Plastics
Industry, Inc.

Keller and Heckman
1150 17th Street, N.W.
Suite 1000
Washington, D. C. 20036
Telephone: (202) 296-2700

Subscribed and sworn to before me this 5th day of November, 1974.


Notary Public

My Commission Expires Feb. 14, 1976

Seal:

BOR 004479

MEMORANDUM

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
CENTER FOR DISEASE CONTROL
NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH

Director, Office of Standards
Occupational Safety and Health
Administration, DOL

DATE: October 21, 1974

A-67

FROM: Acting Director, NIOSH

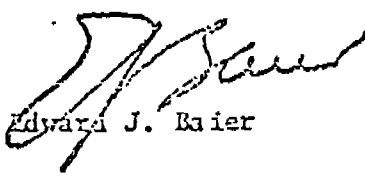
SUBJECT: Vinyl Chloride Respirator Usage

NIOSH has reviewed the Occupational Safety and Health Standard for Exposure to Vinyl Chloride which appeared in the October 4, 1974, Federal Register (39 FR 35390). Particularly noted were those sections dealing with respirator usage, which allowed the use of air-purifying respirators under certain circumstances.

Unfortunately, as indicated in the enclosed memorandum, no respirators of a cannister or cartridge type that will protect the worker in non-emergency operations is currently available or likely to be this year.

Therefore, the NIOSH stand for protection in non-emergency situations must remain as stated in the Recommended Standard transmitted to OSHA on March 11, 1974:

"Until exposures to vinyl chloride are reduced below detectable levels, employees entering any regulated area shall be provided with and required to wear and use a full-face, supplied air respirator, of the continuous flow or pressure demand type in accordance with 1910.134."


Edward J. Baier

Enclosure

RECEIVED

OCT 23 1974

NIOSH - REGION III

BOR 004480

MEMORANDUM

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
CENTER FOR DISEASE CONTROL
NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH

TO : Edward J. Walter
Acting Director, NIOSH

DATE: October 18, 1974

A-68

FROM : Acting Director, Office of Research
and Standards Development

SUBJECT: Respirator Use Recommendations for Vinyl Chloride

The current NIOSH respiratory protection recommendations, as expressed in the Recommended Standard for Occupational Exposure to Vinyl Chloride, calls for use of positive-pressure supplied air respirators where there is detectable exposure to vinyl chloride.

In preparing for the above recommendation, the NIOSH Engineering Branch in Cincinnati tested organic vapor canisters and cartridges for effectiveness against vinyl chloride. An Evaluation of Organic Vapor Respirator Cartridges and Canisters Against Vinyl Chloride, by David L. Smith and William S. Giesler (NIOSH Publication No. 75-111) describes these tests and supports the above recommendations.

On September 19, 1974, Mr. Grover Wrenn of OSHA, met with Messrs. Lynch, Gudeman, and Bryant of NIOSH, to discuss respiratory protection against vinyl chloride. Mr. Wrenn indicated then that OSHA was determined to permit use of powered air-purifying respirators and gas masks for vinyl chloride respiratory protection for routine and non-routine use, respectively.

OSHA, subsequently, revised these proposed use requirements and the Occupational Safety and Health Standard for Exposure to Vinyl Chloride which appeared in the October 4, 1974, Federal Register (39 FR 35390), contained the following general requirements:

1. Respirator use is voluntary.
2. MESA/NIOSH - approved respirators shall be used.
3. A respirator program shall be established and maintained.

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4. The following respirators may be used.

Over 3,600 ppm	positive pressure SCBA
Not over 3,600 ppm	supplied air respirators (positive pressure)
Not over 100 ppm	supplied air respirators
Not over 25 ppm	powered air purifying respirator
	gas mask (4 hours service life up to 25 ppm)
Not over 10 ppm	chemical cartridge respirator (1 hour service life up to 10 ppm)

The above respirator use requirements in item 4 are based on expected performance criteria that would reduce the vinyl chloride concentration in the wearer's breathing to acceptable levels.

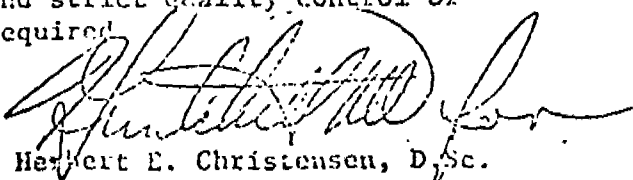
No canister or cartridge masks are currently available which meet NIOSH requirements nor are any expected to be approved during this year.

Consequently, the original recommendation by NIOSH is to be reiterated, i.e. employees entering any regulated area shall be provided with and required to wear and use a full-face, supplied air respirator, of the continuous flow or pressure, demand type in accordance with 1910.134.

In response to this publication, the NIOSH Engineering Branch has prepared test requirements for, and TCL is preparing to approve, canisters and cartridges meeting the following general performance requirements:

Device	Test Concentration, ppm Vinyl Chloride	Service life, hours
Canister	25	6
Air-purifying cartridge	10	2
Powered air- purifying cartridge	25	6

Each type of device shall be equipped with an end-of-service life indicator. The approved devices would bear labels requiring careful fitting to the respirator wearer and strict quality control of sorbent materials which would be required.


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Attachment

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