

BIBLIOGRAPHY

1. Allen, E. E., "How to Combat Control Valve Noise," Chemical Engineering Progress, Vol. 71, No. 8, pages 43-47.
2. "American Petroleum Institute Guidelines on Noise," February 21, 1973, by TRACOR, Inc. for American Petroleum Institute.
3. Arant, J. B., "Special Control Valves Reduce Noise and Vibration," Chemical Engineering, March 6, 1972, pages 92-98.
4. Bragdon, C. R., "Municipal Noise Ordinances: 1975," Sound and Vibration Magazine, Dec. 1975, pages 24-30.
5. Bruce, R. D., and R. E. Werchan, "Noise Control in the Petroleum and Chemical Industries," Chemical Engineering Progress, Vol. 71, No. 8, pages 56-59.
6. Goldsmith, J. R., M. D. and Erland Johnson, Ph.D., "Health Effects of Community Noise," AJPH, 1973, Vol. 63, No.9, pages 782-793.
7. Goodfriend, L. S., "A Professional's Strategies and Tactics: Exploring Community Noise Levels," Noise Control Engineering.
8. "Impact of Noise Control at the Workplace," Report No. 2671, Prepared by BBN for U. S. Department of Labor, Nov. 30, 1973.
9. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety," March 1974, U. S. Environmental Protection Agency.
10. Judd, S. H., "Noise Abatement in Existing Refineries," Chemical Engineering Progress, Vol. 71, No. 8, pages 31-42.
11. Judd, S. H., "Noise Abatement in Processing Plants," Chemical Engineering, January 11, 1971, pages 139-145.
12. Kugler, A., "Controlling Noise in Processing Plants," Oil and Gas Journal July 28, 1975, pages 84-87.
13. Kugler, B. A., "Noise Control Design for New Plants," Chemical Engineering Progress, Vol. 71, No. 8, pages 48-52.
14. Lyon, R. H., "Propagation of Environmental Noise," Science, Vol. 179, No. 4078, March 16, 1973, pages 1083-1090.
15. "Model Community Noise Control Ordinance," September 1975, National Institute of Municipal Law Officers.
16. "Noise from Industrial Plants," December 31, 1971, Prepared by L. S. Goodfriend Associates under Contract 68-04-0044 for the U. S. Environmental Protection Agency.

NATIONAL PETROLEUM REFINERS ASSOCIATION

Founded 1902

SUITE 802, 1725 DESALES STREET N.W. WASHINGTON, D.C. 20036
TELEPHONE (202) 638-3722

PAT R. WRIGLEY

DIRECTOR, INDUSTRIAL RELATIONS & SAFETY

TO: Refinery and Petrochemical Plant Safety Directors
NPRA's Fire & Accident Prevention Committee

FROM: Pat R. Wrigley

We have enclosed several items of information dealing with OSHA and NIOSH.

We have also enclosed a paper, Community Noise Regulations Effect on the Petroleum Industry, which was prepared by the Community Noise Task Force of the Stationary Source Emissions Committee.

A reminder to those of you who have not responded to our January 26 memo dealing with the Report of Occupational Injuries for 1976 -- we hope that you will return the completed questionnaire as soon as possible, so that we can include your facility in the compilation of the data. If you did not receive this memo, please telephone us and we will be glad to see that a copy is directed to your attention.

On January 18, we directed a memo to the Refinery and Petrochemical Plant Safety Directors with details on the plans which we have for the presentation of the NPRA Safety Awards at the Association's 75th Annual Meeting in San Francisco on March 29. If you did not receive this memo, please contact us and we will see that you receive a copy.

For your information, we have enclosed a copy of the OSHA Booklet on Publications & Training Materials.

#

2/7/77

MCD 000009599

COMPANY: _____

PLANT LOCATION: _____

By (Full Name) _____

(Please type)

TELEPHONE NO. () _____

REPORT OF OCCUPATIONAL INJURIES AND ILLNESSES FOR THE YEAR 1976

1	2			3					4		
Total Hours Worked	Recordable Cases			Extent and Outcome of Injury or Illness					Incidence Rates		
	a.	b.	c.	d.	e.	f.	g.	h.	i.	j.	k.
	Injuries	Illnesses	Total (a+b)	Fatalities	Lost Workday Cases				Cases		Days
					Total Cases	Cases Involving Days Away From Work	Number of Days Away From Work	Number of Days of Restricted Activity	Total Cases	Deaths and lost time cases	Lost Workdays

INSTRUCTIONS:

TOTAL HOURS WORKED—COLUMN 1

If possible, report the total number of hours actually worked by all employees during the reporting year including overtime worked. Do not include any non-work time even though paid such as vacations, holidays, sick leave, etc. The hours worked figure should be obtained from payroll or other time records whenever possible. If necessary to estimate hours worked, give consideration to actual working schedules. For salaried employees working 40 hours per week, a monthly figure of 173.3 hours per employee may be used.

RECORDABLE CASES—COLUMN 2

Recordable occupational injuries and illnesses are any cases which involve:

- (1) Occupational Fatalities (deaths) regardless of the length of time between injury and death, or the length of the illness, or
- (2) Occupational Illnesses; or
- (3) Occupational Injuries which result in one or more of the following: loss of consciousness; restriction of work or motion; transfer to another job; medical treatment (other than first aid); or lost workdays.

EXTENT AND OUTCOME OF INJURY OR ILLNESS—COLUMN 3

Each recordable case must be classified as to extent and outcome as follows:

- Column 3 (d) Fatality - A fatality resulting from an occupational injury or illness should be charged to the year in which the injury occurred or the illness was diagnosed as an occupational illness.
- Column 3 (e) Lost Workday Cases - All cases which involve days away from work or days of restricted activity, or both, should be shown in Column 3 (e).
- Column 3 (f) Lost Workday Cases - Unable to Work - All cases which result in the employee being unable to work should be shown in Column 3 (f).
- Column 3 (g) Number of Days Away From Work - Enter the total number of workdays (consecutive or not) on which the employees involved in cases entered in Column 3 (f) would have worked but did not because of occupational injury and illness.
- Column 3 (h) Number of Days of Restricted Activity - Enter the total number of workdays (consecutive or not) on which the employees involved in cases entered in Column 3 (c) were (1) assigned to a temporary job; (2) worked at a permanent job less than full time or (3) worked at a permanently assigned job but were unable to perform all duties normally assigned to it.
- The number of lost workdays should not include the day of injury or any days which the employee was not scheduled to work.

INCIDENCE RATES—COLUMN 4

All incidence rates recorded in Column 4 are calculated as follows:

$$\text{Incidence Rates} = \frac{\text{Number of Injuries and/or Illness} \times 200,000}{\text{Total Hours Worked During the Year}}$$

200,000 - base for 100 full time equivalent employees.

$$\text{Column 4 (i)} = \frac{\text{Column 2 (c)} \times 200,000}{\text{Column 1}}$$

$$\text{Column 4 (j)} = \frac{\text{Column 3 (d)} + \text{Column 3 (f)} \times 200,000}{\text{Column 1}}$$

$$\text{Column 4 (k)} = \frac{\text{Column 3 (g)} \times 200,000}{\text{Column 1}}$$

MCD 000009600

Title 29—Labor

CHAPTER XVII—OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, DEPARTMENT OF LABOR

PART 1903—INSPECTIONS, CITATIONS AND PROPOSED PENALTIES

PART 1904—RECORDING AND REPORTING OCCUPATIONAL INJURIES AND ILLNESSES

PART 1951—GRANTS FOR IMPLEMENTING APPROVED STATE PLANS

Civil Penalties for First Instance Violations; Employers in Farming Operations With Ten or Fewer Employees; Small Employer Survey; Effect on State Grants; Interpretation

• 1. *Purpose.* Notice is hereby given pursuant to the Administrative Procedure Act, 5 U.S.C. 552(a) (1) (D) and section 8(g) (2) of the Occupational Safety and Health Act of 1970 (hereinafter referred to as the Act) (29 U.S.C. 657(g) (2)) of the Department of Labor's interpretation of the funding limitations in Title I of the Department of Labor-Department of Health, Education, and Welfare Appropriations Act for Fiscal Year 1977 (Pub. L. 94-439) which became effective October 1, 1976, and will cease to be in effect September 30, 1977, unless extended. •

Pub. L. 94-439 places two limitations on the expenditure of funds for the Occupational Safety and Health Administration (hereinafter referred to as OSHA) by providing as follows:

That none of the funds appropriated under this paragraph shall be obligated or expended for the assessment of civil penalties issued for first instance violations of any standard, rule, or regulation promulgated under the Occupational Safety and Health Act of 1970 (other than serious, willful, or repeated violations under section 17 of the Act) resulting from the inspection of any establishment or workplace subject to the Act, unless such establishment or workplace is cited, on the basis of such inspection, for 10 or more violations: *Provided further,* That none of the funds appropriated under this paragraph shall be obligated or expended to prescribe, issue, administer, or enforce any standard, rule, regulation or order under the Occupational Safety and Health Act of 1970 which is applicable to any person who is engaged in a farming operation and employs 10 or fewer employees.

Because of the one-year duration of the funding limitations of Pub. L. 94-439, this notice does not constitute an amendment to 29 CFR Parts 1903, 1904, and 1951. The purpose of this notice is to interpret the terms of those limitations and their relation to State plans approved under section 18 of the Act. However, in the case of any conflict between provisions of those parts and this notice, the provisions of this notice shall be controlling during fiscal year

1977 unless subsequently extended or provided otherwise by statute or regulation. Notice of the funding limitations has been prepared as a rulemaking document in order to give the public the most effective notice possible.

The Department of Labor appropriations acts for fiscal years 1975 and 1976 exempted employers employing ten or fewer employees from OSHA recordkeeping requirements, except with respect to the provisions of 29 CFR 1904.15 which require exempted small employers to report fatalities and multiple hospitalization accidents and also to participate in the Bureau of Labor Statistics' (hereinafter referred to as BLS) annual statistical survey if the small employers are selected by BLS for such participation. But the appropriations act for fiscal year 1977 (Pub. L. 94-439) did not include this recordkeeping exemption. The present OSHA recordkeeping regulation (29 CFR 1904.15) exempts employers employing seven or fewer employees. OSHA, however, intends to publish in the near future a proposal to amend the recordkeeping regulation to extend the existing exemption to employers of ten or fewer employees. In order to avoid any undue burden on small employers, pending any permanent change in the regulation, OSHA will continue treating employers with 8, 9, and 10 employees as exempt as was provided by the appropriations acts for fiscal years 1975 and 1976. However, as stated above, this exemption for small employers does not, as provided in § 1904.15, apply to those employers selected to participate in the BLS annual survey or to the requirement for reporting fatalities or multiple hospitalization accidents.

2. *Scope.* (a) The first funding limitation under Pub. L. 94-439 is applicable to all employers covered by the Act and will be implemented as follows:

(1) No penalty will be proposed for a first instance other-than-serious violation unless 10 or more total violations are cited. This "10 or more" includes all violations; that is, other-than-serious, serious, willful, repeated, and failure to abate, but does not include *de minimus* violations. If 10 or more violations are cited, all 10 are subject to proposed penalties to be calculated in accordance with the instructions in the Occupational Safety and Health Field Operations Manual (hereinafter referred to as the Manual).

(2) Civil penalties will be proposed in accordance with instructions in the Manual, for all notifications of failure to abate, serious, willful and repeated violations. In addition, if upon reinspection of a workplace, an employer is cited for a violation of the same subsection of a standard which was cited during a previous inspection, the alleged violation shall be treated as a second instance violation and may be accompanied by a proposed penalty regardless of whether the alleged violation is cited as other-than-serious. Citations which include second instance other-than-serious violations with penalties will be accompanied by a

brief explanation to the employer as to the reason for the proposed penalty, if fewer than 10 violations are cited.

(3) Grouping of several violations of a single standard into a single alleged violation, and grouping of individual other-than-serious violations which, when considered together, would be a serious violation, will continue according to present policy in the Manual.

(4) The first limitation is applicable to all other-than-serious violations, including violations of the posting requirements under section 17(i) of the Act.

(5) If, as a result of an inspection, a citation was issued for 10 or more violations, and penalties were proposed for some or all of the other-than-serious violations and an amended citation is issued which brings the number of violations below 10, any remaining penalties for first instance other-than-serious violations will be eliminated on the amended citation.

(6) If both safety violations and possible health violations are found in an establishment, a citation will be issued as soon as possible for the safety violations and will not be held awaiting laboratory results. If laboratory results confirm any health violations, a second citation should be issued for the health violations found during the same inspection, but the number of violations will not be tallied from both citations to determine whether 10 or more exist for penalty purposes. Penalties will be proposed, or not be proposed, based on the number of violations in each separate citation.

(7) The limitation will also be applicable to OSHA actions involving penalties in proceedings before the Occupational Safety and Health Review Commission.

(b) The second funding limitation (farm-operations) under Pub. L. 94-439 is applicable to all employers covered by the Act who are engaged in a farming operation and employ 10 or fewer employees and will be implemented as follows:

(1) For the purposes of this limitation, a "farming operation" is defined as any operation involved in the growing or harvesting of crops or the raising of livestock or poultry, or related activities conducted by a farmer, on sites such as farms, ranches, orchards, dairy farms or similar farming establishments.

(2) No inspection will be made of an employer engaged in a farming operation if he employs 10 or fewer employees in all his workplaces. Members of the immediate family of the farm employer are not regarded as employees in making the initial determination as to that number.

(3) At the beginning of any inspection the Compliance Safety and Health Officer (hereinafter referred to as the CSHO) will initially determine, by inquiring of the employer, how many employees he has on the day of the inspection. If the employer states that he employs ten or fewer employees, the CSHO will then inquire as to the maximum number of employees he employed at

any one time during the twelve months immediately prior to the inspection date. If the employer has had more than 10 employees at any one time during the previous 12 months the CSHO will proceed with the inspection. Where an inspection is conducted based on 11 or more employees employed at the time of the inspection or in the twelve month period prior to the date of the inspection, any further enforcement action will be continued regardless of the number of employees employed at any later date.

(4) Any inspection made of an employer engaged in a farming operation who has more than 10 employees, is subject to all of the provisions of the first funding limitation as stated in 2(a) above.

(5) No consultation services will be provided to any employer engaged in a farming operation if the employer has 10 or fewer employees.

3. *State plans.* Under section 18(c) (2) of the Act and 29 CFR 1902.3(d) (1), a State plan is required to provide a program for the enforcement of State standards which is, or will be, at least as effective as that provided in the Act, and provide assurances that the State's enforcement program will continue to be at least as effective as the Federal program. The provisions of the funding limitations in Pub. L. 94-439 do not limit State authority for the assessment of civil penalties issued for first instance violations of any standard, rule or regulation promulgated under State law, or to enforce any standard, rule, regulation or order, under State law, which is applicable to any person who is engaged in a farming operation and employing 10 or fewer employees.

However, States which engaged in activities for which Federal funds may not be expended under Pub. L. 94-439 will not be reimbursed under sections 23(g) and 24(b) of the Act for any share of funds expended by the State for those activities. States receiving 23(g) and 24(b) grant funds must be able to demonstrate that no portion of the grant funds has been used for the activities prohibited in the funding limitations.

4. *Effective date.* This notice is effective and will continue to be applicable for as long as the funding limitations in Pub. L. 94-439 remain in effect, unless modified or revised by the Assistant Secretary in the Federal Register.

(Sec. 5(g) (2), 84 Stat. 1800 (29 U.S.C. 657(g) (2)); 5 U.S.C. 552(a) (1) (D))

Signed at Washington, D.C., this 19th day of January 1977.

MORTON COX,
Assistant Secretary of Labor.

[FR Doc. 77-3378 Filed 1-19-77; 8:06 pm]

FEDERAL REGISTER, VOL. 42, NO. 19—FRIDAY, JANUARY 28, 1977

MCD 000009602

PROPOSED RULES

DEPARTMENT OF LABOR**Office of the Secretary****[29 CFR Part 90]****CERTIFICATION OF ELIGIBILITY TO APPLY
FOR WORKER ADJUSTMENT ASSISTANCE****Proposed Rulemaking: Correction**

In FR Doc. 77-1289 appearing at page 2981 in the **FEDERAL REGISTER** of January 14, 1977, the comment period appearing on page 2981, is corrected in the 2nd column, 32nd line, to read "February 14, 1977," instead of "February 10, 1977."

Signed at Washington, D.C., this 21st day of January 1977.

JOEL SEGALL,
*Deputy Under Secretary
International Affairs.*

[FR Doc. 77-2827 Filed 1-27-77; 8:45 am]

**Occupational Safety and Health
Administration****[29 CFR Part 1910]****HAZARDOUS MATERIALS LABELING****Advance Notice of Proposed Rulemaking**

The Occupational Safety and Health Administration (OSHA), U.S. Department of Labor, is studying the recommendations of the Standards Advisory Committee on Hazardous Materials Labeling and requests public comment as to whether a standard requiring employers to label hazardous materials should be developed and what should be contained in such a standard to assure that employees are apprised of the hazards to which they are exposed.

FEDERAL REGISTER, VOL. 42, NO. 19—FRIDAY, JANUARY 28, 1977

MCD 000009603

Section 6(b)(7) of the Occupational Safety and Health Act of 1970 (84 Stat. 1595, 29 U.S.C. 655) authorizes OSHA to issue standards which "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." The Standards Advisory Committee on Hazardous Materials Labeling was established under section 7(b) of the Act (29 U.S.C. 656) to develop guidelines for the implementation of section 6(b)(7) of the Act with respect to hazardous materials. The Committee was requested:

to develop guidelines for categorizing and ranking hazards of materials, and guidelines for prescribing the required warnings of such hazards and related information on symptomatology, protective steps and equipment, and safe handling procedures, by such means as labels, data sheets and training requirements,

and to report to the Assistant Secretary of Labor for Occupational Safety and Health within 270 days following establishment of the Committee. The work of the Committee was to be basically limited to chemicals.

The Advisory Committee began its deliberations on September 19, 1974, and concluded its activities in June 1975. All scheduled meetings were open to the public, and were announced in advance in the Federal Register. The final report of the Committee, endorsed by a majority of the Committee members, was transmitted to the Assistant Secretary on June 6, 1975. There were also three minority reports on various sections of the final report.

Prior to developing specific recommendations, the Committee identified and discussed several major issues. For example, the Committee considered questions relating to classification systems for hazardous chemicals addressing itself to what major classification systems exist, their strengths and weaknesses, as well as their basis of design, and their ability to meet the objectives and scope of such classification systems. Further, questions arose concerning the maintenance, updating, and revision of classification systems, and concerning how a standard should accommodate changing technological developments affecting the classification system? Requirements and practices in these areas have been well established in many industries and by professional associations, as well as regulated by various government agencies and international agreements. The Committee tried to take cognizance of the existing practices in arriving at its final conclusions. Among other materials, the Committee also considered the document, "An Identification System for Occupationally Hazardous Materials," which was prepared by the National Institute for Occupational Safety and Health (NIOSH). A draft of the NIOSH document was given to the Committee members at their first meeting, and they re-

ceived the final document midway through their deliberations.

The basic premise of the Committee in developing guidelines for categorizing and ranking hazards of materials and for prescribing the required warnings by labels, data sheets and training programs, involved a total system concept. This concept utilizes an integrated program including material safety and health hazard information in the formulation and implementation of an employee training program. Some or all of the parts of the system are required, as warranted by the potential hazard conditions. Under the Committee's recommendations, the determination of the specific hazard classification/ranking of a material, and the implementation of such items as material safety data sheets, hazard placard systems, and labeling systems in employee training and indoctrination programs, would be the specific responsibility of the employer.

In developing guidelines for the hazard classification and ranking of a material, the Committee confined its recommendations to three major categories of hazards: flammability, reactivity, and health. The Committee suggested that the Secretary consult with other Federal agencies concerned with material hazards, such as the Environmental Protection Agency, the Consumer Products Safety Commission, and the Department of Transportation, to solicit information that would be of assistance to OSHA in the preparation of a proposal for hazardous materials labeling.

The Committee recommendations with regard to label requirements are extensive, as a label affords the most immediate means of informing an employee of the hazards of a particular material.

They are based on the language labeling system developed by a committee of the Manufacturing Chemists Association, certain United Nations symbols, and certain provisions of the regulations of the Federal Hazardous Substances Act.

The Committee recommended that each employer prepare a material safety data sheet to be used in combination with other components of the system such as labels, placards, and employee indoctrination programs to provide employers and employees with relevant information on potentially hazardous materials and situations.

An indoctrination program and continuing employee training concerning potential hazards is recommended by the Committee. The indoctrination program and training include: hazard identification and recognition, relevant symptoms of disease, emergency procedures, and the necessity for accurate recordkeeping.

In addition to considering the above recommendations, OSHA has received other information related to hazardous materials labeling. The Health Research Group submitted a petition on September 27, 1976, requesting that OSHA promulgate a regulation which would require "each employer to post and provide to each employee representative a list of the generic names of all chemicals used and

produced at the workplace." In addition, members of Congress have expressed interest in this subject and have suggested that OSHA initiate steps to issue a regulation requiring disclosure to employees of the generic name of chemicals to which they are exposed.

In September 1976, the Committee on Government Operations of the House of Representatives issued a report (House Report No. 94-1688) dealing with chemical dangers in the workplace. As one of its several findings and conclusions, the Committee stated that "the Occupational Safety and Health Administration has failed to implement section 6(b)(7) of the Occupational Safety and Health Act which requires that employees be apprised of and be protected from the hazards to which they are exposed." The Report then commented that OSHA's promulgation of the Threshold Limit Value list (29 CFR 1910.1000) as a standard was an initial step that should be supplemented by "regulations requiring labeling, monitoring, and training." In order to comply with the intent of the recommendations contained in the Committee Report, OSHA is publishing this notice as a preliminary step in the development of a regulation.

Accordingly, interested persons are invited to submit written data, views, and arguments concerning a standard on hazardous materials labeling. Comments are specifically requested concerning:

1. Whether a standard on hazardous materials labeling should be issued or be included in the Standards Completion Project or be covered by another mechanism;
2. The source for the list or group of chemicals to be included in this standard (the chemicals contained in 29 CFR 1910.1000, the NIOSH Toxic Substances List, or other source);
3. Each section of the advisory committee recommendations;
4. Suitable alternatives to the recommendations of the advisory committee;
5. The national Institute for Occupational Safety and Health document, "An Identification System for Occupationally Hazardous Materials;"
6. The obligation of an employer to determine the hazards related to the materials to which his employees are exposed;
7. Criteria for establishing categories of hazards;
8. Whether the contents of the labels should be in the nature of a warning or contain descriptive information concerning the hazards of each material;
9. Appropriate training requirements and other means of informing the employee;
10. The listing of generic names for trade name substances covered by the regulation;
11. Supported cost data of the estimated costs of coming into compliance with the recommendations of the advisory committee;
12. The relationship of an OSHA standard on hazardous materials labeling with the authority and regulations of DOT, CPSC, and EPA; and

13. Any other related issues.

Communications must be submitted by March 29, 1977 to the Docket Officer, OSHA, New Department of Labor Bldg., 200 Constitution Avenue, NW., Washington, D.C. 20210. The submissions will be available for public inspection and copying at the above location.

The recommendations of the Standards Advisory Committee on Hazardous Materials Labeling will be available for inspection and copying, upon request, at any of the following addresses:

NATIONAL OFFICE

Department of Labor-OSHA, Room N3520, 200 Constitution Ave., N.W., Washington, D.C. 20210.

REGIONAL OFFICES

REGION I

U.S. Department of Labor, Occupational Safety and Health Administration, JFK Federal Building, Room 1804—Government Center, Boston, Massachusetts 02203.

REGION II

U.S. Department of Labor, Occupational Safety and Health Administration, 1515 Broadway (1 Astor Plaza), Room 3445, New York, New York 10036.

REGION III

U.S. Department of Labor, Occupational Safety and Health Administration, Gateway Building—Suite 2100, 3535 Market Street, Philadelphia, Pennsylvania 19104.

REGION IV

U.S. Department of Labor, Occupational Safety and Health Administration, 1375 Peachtree Street, N.E.—Suite 587, Atlanta, Georgia 30309.

REGION V

U.S. Department of Labor, Occupational Safety and Health Administration, 230 South Dearborn Street, 32nd Floor—Room 3263, Chicago, Illinois 60604.

REGION VI

U.S. Department of Labor, Occupational Safety and Health Administration, 555 Griffin Square Building, Room 802, Dallas, Texas 75202.

REGION VII

U.S. Department of Labor, Occupational Safety and Health Administration, 911 Walnut Street—Room 3000, Kansas City, Missouri 64106.

REGION VIII

U.S. Department of Labor, Occupational Safety and Health Administration, Federal Building—Room 15010, 1961 Stout Street, Denver, Colorado 80294.

REGION IX

U.S. Department of Labor, Occupational Safety and Health Administration, 9470 Federal Building, 450 Golden Gate Avenue—Box 36017, San Francisco, California 94102.

REGION X

U.S. Department of Labor, Occupational Safety and Health Administration, Federal Office Building, Room 6045, 909 First Avenue, Seattle, Washington 98174.

This advance notice of proposed rule-making is issued under sections 6 and 8 of the Occupational Safety and Health Act of 1970 (84 Stat. 1593, 1599; 29 U.S.C.

655, 657) and Secretary of Labor's Order No. 8-76 (41 FR 25059).

Signed at Washington, D.C., this 19th day of January, 1977.

MORTON CORN,

Assistant Secretary of Labor.

[FR Doc. 77-2577 Filed 1-25-77; 4:17 pm]

[29 CFR Part 1910]

[Docket No. OSH-11A]

OCCUPATIONAL NOISE EXPOSURE

Availability of Post-Hearing Comments and Additional Information on Economic Impact Analysis; Limited Comment Period

Pursuant to notices published in the FEDERAL REGISTER on June 18, 1976 (41 FR 24718) and August 6, 1976 (41 FR 32912), an informal hearing was convened on September 21, 1976 concerning the economic impact analysis (EIA) of the proposed standard on occupational noise exposure, and related issues as set forth in the notices. The hearing extended through October 8, 1976, at which time Administrative Law Judge Jean Greene who had presided at the hearing, announced that the record would remain open for receipt of post-hearing comments for a period of 60 days.

During the hearing, OSHA received many requests for information which was not contained in the economic impact analysis itself, but which was related to its preparation. OSHA's representative at the hearing noted that all requests for additional material would be taken under advisement by the agency, and that a decision would be forthcoming with regard to such material.

As was discussed at the hearing, it would require substantial additional funding and effort to provide the requested information for the record. Much of the requested information could not be made public by the contractor because it was obtained pursuant to pledges of confidentiality. Moreover OSHA cannot make such information available because OSHA does not have it in its possession or control. With regard to requested data the release of which would not breach any pledges of confidentiality, OSHA has decided to take steps to supply such data for the record, and has contracted with Bolt Beranek and Newman, Inc., (BBN), the contractor for the EIA, to make it available.

In addition, BBN has prepared a post-hearing comment, which discusses certain issues that arose at the hearing, particularly those areas of the EIA which have engendered the most comment. This post-hearing comment is now available for inspection and copying at the following address:

Technical Data Center (Docket No. OSH-11A), Room N-3620, Occupational Safety and Health Administration, U.S. Department of Labor, 3rd Street and Constitution Avenue, NW, Washington, D.C. 20210.

The BBN post-hearing comment includes data requested at the hearing

which can be furnished without compromising BBN's pledges of confidentiality.

OSHA recognizes that participants at the hearing may wish to comment on the additional information contained in BBN's post-hearing comment. Therefore, OSHA hereby reopens the comment period for the limited purpose of permitting participants at the hearing to comment upon the BBN post-hearing comment, for a period of 30 days. Comments must be submitted in quadruplicate to the above address, and must be postmarked on or before February 28, 1977.

At the end of this period the presiding Administrative Law Judge will certify the record of the proceeding to the Assistant Secretary of Labor for Occupational Safety and Health. The proposal will be reviewed in light of all oral and written submissions received as part of the record and final action will be taken based on the entire record developed in this proceeding.

(Sec. 6, Pub. L. 91-596, 84 Stat. 1593 (29 U.S.C. 655); 29 CFR Part 1911; Secretary of Labor's Order No. 8-76.)

Signed at Washington, D.C., this 19th day of January 1977.

BERT M. CONCKLIN,

Deputy Assistant Secretary of Labor

[FR Doc. 77-2376 Filed 1-19-77; 3:06 pm]

Develop criteria dealing with toxic materials and harmful physical agents and substances which will describe exposure levels that are safe for various periods of employment, including but not limited to the exposure levels at which no employee will suffer impaired health or functional capacities or diminished life expectancy as a result of his work experience.

In addition, section 22(c) of the Act authorizes NIOSH to develop recommended occupational safety and health standards. These criteria and the recommended standard developed by NIOSH are intended to be a principal source of information to OSHA concerning many aspects of standards proposals. As noted by the United States Court of Appeals for the District of Columbia Circuit in "TUD v. Hodgson", 499 F. 2d 467 (D.C. Cir. 1974), while NIOSH criteria documents do not address all of the elements relevant to OSHA rulemaking and while OSHA is to consider all of the information available to it, the NIOSH recommendations were intended to be an important aid of OSHA in the rulemaking process.

PROCEDURE

As of December 31, 1976, NIOSH has transmitted a total of 57 criteria documents to OSHA (see Appendix A) for consideration as the basis for the development of mandatory occupational safety and health standards. OSHA has initiated rulemaking on a significant number of the hazards identified by the Criteria Documents, and in some instances published Advance Notices of Rulemaking or Notices of Receipt of Criteria Document in order to elicit public comment on key issues during the early stages of the respective proceedings, and to encourage public involvement in determining the appropriate course of regulatory action and in the formulation of future proposed standards.

In the past year, NIOSH has published as many criteria documents as had been published in the preceding years of its existence. This rate of criteria document development is expected to continue. OSHA recognizes the need to establish rational priorities for the initiation of rulemakings on the basis of the NIOSH recommendations. We further recognize that public comment on the relative need for OSHA standards on the hazards addressed by the NIOSH criteria document can be of substantial benefit in setting these priorities. Therefore, OSHA proposes the continued use of Advance Notices of Proposed Rulemaking, published on a routine basis as new criteria documents are received, to invite public comment on the need for OSHA rulemakings to establish mandatory standards, and if standards should be deemed necessary, on the relative priority of developing these standards. We believe such a procedure will assist OSHA in determining the best allocation of its staff resources to address the most serious hazards. We also believe that the Advance Notice should continue to identify key issues on which data and other

Occupational Safety and Health Administration REVIEW AND EVALUATION OF NIOSH CRITERIA DOCUMENTS Procedures for Review; Request for Information on Cadmium

***Purpose.** This notice describes the procedures that will be followed by the Occupational Safety and Health Administration (OSHA) in evaluating NIOSH criteria documents and, where appropriate, in developing proposed standards on the basis of these criteria documents. This document also requests information from the public in relation to the NIOSH criteria document for cadmium, with special attention to areas where additional information is needed.*

INTRODUCTION

Under section 20(a) (3) of the Occupational Safety and Health Act of 1970 (84 Stat. 1610, 29 U.S.C. 659), the Secretary of Health, Education and Welfare, acting through the National Institute for Occupational Safety and Health (NIOSH), is directed to:

information are requested from the public to be used in the development of proposed standards. There have been a number of recent criteria documents for which OSHA has not published any notice of receipt or other advance notice of rulemaking. Beginning with this notice, OSHA will publish notices in the FEDERAL REGISTER for all criteria documents received to date and will continue to publish such notices as new recommendations are received.

In addition to noting the availability of new criteria documents containing NIOSH's recommended standards for occupational exposure to toxic substances or other work place hazards, the notices will summarize the hazards presented; the types and extent of use; the major affected parties, as identified in the criteria document; the source of the present standard; the NIOSH recommended standard; and the basis for the recommended standard. While public comment is invited on any issue raised by the NIOSH recommendations, comment and information are specifically requested on the following issues to assist OSHA in fulfilling its responsibilities:

1. Whether the criteria document adequately demonstrates the need for and appropriateness of regulating this substance or other hazard.
2. What benefits are expected to result from the regulation, i.e., what mortality and morbidity are associated with current exposures, and to what extent would that be reduced by the recommended standards.
3. Are affected industries and employee groups, number of employees exposed and conditions of exposure correctly described in the criteria document.
4. Description of current engineering and work practice controls for major affected processes/industries.
5. What is the technological and economic feasibility of the NIOSH recommendations (e.g., control measures, methods of measurement)?
6. Whether the sampling and analytical methods recommended are appropriate and can be feasibly complied with by affected employers.
7. What are the environmental impacts of the recommended standard?

These comments will become part of the record of rulemaking which will be used in deciding on the appropriate course of regulatory action, if any, for each criteria document and will also assist in preparing the proposed standards for those hazards chosen to be addressed in an OSHA standards development project.

CADMIUM—BACKGROUND

Cadmium, atomic number 48 and atomic weight 112.40, is a metallic element with a silver-blue-white appearance. It is soft and ductile and highly corrosion resistant due to the formation of the oxide which resists further oxidation. Cadmium is mined in conjunction with other metals, principally zinc. Cadmium occurs in nature as cadmium sulfide, or greenockite, which is the most common cadmium ore, although it is found in economically recoverable form only with the sulfides of other metals (e.g. zinc sulfide). Cadmium is obtained

as a by-product of zinc, lead-zinc, and copper-lead-zinc ore refining.

NIOSH estimates U.S. cadmium production in the 1961-70 period to be 4.2 to 6.9 million kilograms. Electroplating accounts for 45-60 percent of cadmium use. About 1 million kg/year are used for stabilizers for plastics, particularly polyvinyl chloride. A like quantity is used for pigments. One quarter to one half million kilograms of cadmium are used annually as an alloying agent in low-melting-point brazing alloys, in copper for automobile radiators, in silver-cadmium electrical contacts and in other alloys. These uses account for 80-90 percent of cadmium consumption. Other minor uses include nickel-cadmium batteries, fungicides, photograph, and television picture tubes.

Dusts, fume, and mists of cadmium are commonly present in smelting processes involving zinc, copper, and lead as well as in specific processes for extracting cadmium, according to NIOSH.

NIOSH estimates that there are 100,000 workers potentially exposed to cadmium in the occupations listed in Table I.

TABLE I—POTENTIAL OCCUPATIONAL EXPOSURES

Alloy makers
Aluminum solder makers
Battery makers, storage
Cadmium compound collecting bag cleaners
Cadmium compound collecting bag handlers
Cadmium plates
Cadmium smelters
Cadmium vapor lamp makers
Cadmium workers
Ceramic makers
Dental amalgam makers
Electric instrument makers
Electroplaters
Engravers
Glass makers
Incandescent lamp makers
Lithographers
Lithopone makers
Metalizers
Paint makers
Paint sprayers
Photoelectric cell makers
Pigment makers
Small arms ammunition makers
Smoke bomb makers
Solderers
Solder makers
Textile printers
Welders, cadmium alloy
Welders, cadmium plated object
Zinc refiners

EFFECTS OF CADMIUM EXPOSURE

Numerous toxic effects resulting from exposure to cadmium or cadmium compounds reported in the scientific literature are cited in the NIOSH document. Clearly demonstrated effects include anemia, kidney dysfunction, and pulmonary changes including emphysema. Less clearly demonstrated effects, cited by NIOSH, include effects on the gonads, adrenal glands, thyroid, pancreas, and the liver.

Exposure to cadmium can result in kidney malfunction characterized primarily by proteinuria (Ref. 54, 55, 65).¹ This may be a sign of decreased tubular reabsorption although the precise etiology is unknown. Although other evidence

of renal tubular dysfunction such as glucosuria and amino aciduria, have been reported, proteinuria is the most common abnormality found in exposed workers and is probably the earliest sign of renal dysfunction in cadmium intoxication.

Pulmonary effects can result from both acute and chronic cadmium exposure. Acute effects result from exposure to cadmium fume of several milligrams per cubic meter concentration and consist of the delayed (4-10 hours) appearance of dyspnea, cough, and the feeling of chest constriction. Substernal pain, chills and myalgia may also be present. In most cases the symptoms resolve within one week, although, in about 20% of the people exposed, the dyspnea is progressive and wheezing and hemoptysis may develop. Pulmonary edema and interstitial pneumonia may occur. In progressive cases, death characteristically occurs within the first week after exposure. A probable lethal concentration of cadmium oxide fume is about 5 mg/m³ during an 8-hour period (equivalent to 2,400 mg-min/m³). Chronic sequelae include pulmonary fibrosis and "honeycomb lung." Changes may occur in the muscles of the pulmonary and bronchial blood vessels.

Chronic cadmium inhalation has been reported to cause pulmonary emphysema in humans (Ref. 53-56, 59). The exposure times varied in these studies from 2 years to 39 years. Other studies cited by NIOSH have reported no pulmonary effects from chronic cadmium intoxication (Ref. 61-64), but as NIOSH states, at least some of these involved exposures at lower concentrations or for shorter exposure times.

Anosmia (loss of the sense of smell) and hyposmia (reduced sensitivity to smells) are other potential consequences of cadmium exposure reported by NIOSH (Ref. 55, 65, 78, 79). As with lung and kidney damage, duration and concentration of exposure are probably important factors. Although concurrent nickel exposures were reported in some of the studies (55, 65, 78) one study reported insensitivity to smells without evidence of nickel exposure (79).

Moderate anemia has been described in workers exposed for a long time to cadmium oxide dust and fume (38, 55, 81). No bone marrow pathology was found in one group of workers (Ref. 55).

The possible role of cadmium in hypertension is unclear. Studies cited by NIOSH have shown a positive correlation between cardio-vascular disease and ambient cadmium levels (82) and hypertension and urinary cadmium (83). Higher than normal kidney cadmium levels were found at autopsy in 17 adults who were hypertensive (84). NIOSH states, however, that "no definitive relationship between cadmium levels in the kidney and cardiovascular disease has been demonstrated."

Cadmium has been reported to cause certain bone changes (Ref. 34, 71) and

¹ Numbers are reference cited in the NIOSH criteria document.

back and extremity pain (Ref. 38). The bone changes, similar or identical to osteomalacia (softening of bone) are of unknown etiology, although impaired renal tubular regulation of calcium/phosphorus balance may be responsible (Ref. 1).

The "Itai-itai" (ouch-ouch) disease reported by several investigators (Ref. 1, 7, 40, 41, 89) which occurred in certain areas of Japan may be due to contamination of crops and water with industrial wastes containing cadmium. The disease is apparently osteomalacia and involves painful joints and bones, especially in the back and legs. Other factors, such as diet and hormone levels, may also play a role.

The development of a yellow ring at the neck of the tooth was cited by NIOSH to have been reported in early epidemiologic studies of cadmium exposed workers and was at one time suggested to be a warning sign of chronic cadmium poisoning. The etiology and significance of this effect remains unclear.

One study (Ref. 55), cited by NIOSH, reported abnormal liver function tests in workers exposed to cadmium oxide dust for a mean exposure time of 20 years. This was considered as an unusual finding and the extent of liver abnormalities in exposed workers is unknown.

Studies in animals have suggested that cadmium may exert some destructive effect on the gonads (Ref. 91, 92, 162). These studies found testicular necrosis in rats after injection of cadmium chloride solution. Other studies reported by NIOSH, demonstrated that injection of cadmium had a sterilizing effect on the ovaries of rats and gerbils (Ref. 166-169). One study (Ref. 94) reported high levels of cadmium in the tests of men exposed to cadmium fume. NIOSH cautions, however, that further study is necessary before any conclusion can be drawn concerning the possible effects of cadmium on gonadal function in workers exposed to cadmium.

A Russian study, cited by NIOSH, reported reduced birth weights in children born to mothers who had been occupationally exposed to cadmium (Ref. 95). Teratological effects of cadmium have been demonstrated in animals. Severe malformations (e.g., anophthalmia, microphthalmia, hydrocephaly, renal agenesis) have been reported after injection of rats, mice, or hamsters with cadmium chloride (Ref. 172-176). One study (Ref. 174) found no increased rate of malformations in mice at a dose of 0.33 mg/kg but did find a dose-related increase at higher doses (0.63 mg/kg, 2.5 mg/kg, and 5 mg/kg).

Chromosomal damage due to cadmium has also been studied. Male mice were killed 3 months after mating to ascertain fertility, and dividing spermatocytes were examined for chromosomal rearrangements but none were found. In humans, no significant differences in chromosomal aberrations were found in exposed and control groups from Sweden and Japan (Ref. 111). In leukocytes, from Itai-itai patients, cultured in vitro,

and in human leukocytes, cultured with cadmium sulfide, increases in chromosomal aberrations were found (Ref. 112, 113). An increased incidence of aberrations was found in chromosomes cultured from leukocytes of workers exposed to cadmium, zinc, and lead (Ref. 114). The effects of such mixed exposures are difficult to interpret as pointed out by both the authors of the study and NIOSH.

NIOSH included a report of one study which concluded that cadmium exposure can cause central nervous system changes (Ref. 116). Changes in cutaneous, optical and motor nerve chronaxy were reported.

The carcinogenic potential of cadmium has been examined in both exposed human populations and in experimental animals.

Surveys of cadmium workers have indicated that cancer of the prostate may be more frequent in these groups than in the general population (Ref. 65, 96). In one study (Ref. 65), 74 men with greater than 10 years exposure were surveyed. There were 8 deaths in this group, 3 from prostate cancer. In another study (Ref. 96), 4 prostate cancer deaths were found in a cohort of 248 workers. This is significantly more than expected. There may be some overlap in these two studies and one group of investigators, quoted by NIOSH, warned against drawing conclusions until further studies are done (Ref. 96). A study of 92 deaths among 292 cadmium smelter workers revealed 4 prostate cancers compared to 1.15 expected (Ref. 97). This was not considered significant. If only workers alive 20 years after their first exposures were considered 0.88 deaths would have been expected vs. the 4 observed. This was reported to be significant at the 0.05 level.

NIOSH states that these studies are suggestive of a link between occupational exposure to cadmium and prostate cancer but that the number of cases are small and some of these studies may be overlapping.

A significant excess (12 obs. vs. 5.11 exp.) of cancer of the respiratory tract has been reported in workers exposed to cadmium (Ref. 97). These authors also noted a significant excess of all neoplasms (27 obs. vs. 17.5 exp.).

In a study of patients hospitalized due to suspected neoplastic disease, Kolonel (Ref. 101) found a significant increase in renal cancer and a nonsignificant increase in pancreatic cancer in patients through to have had cadmium exposure. No increase in prostate cancer was found. NIOSH views the result of this study as uncertain due to the deficient occupational histories.

Elevated blood and tissue cadmium levels were found in lung cancer patients in a study by Morgan (Ref. 103). But whether this was a cause or effect is unknown.

Cadmium chloride produced tumors at the injection site in 3 of 30 rats 12-16 months post-injection (Ref. 182). Injection site sarcomas have also been induced by suspensions of cadmium oxide, sulfide, sulfate, and metal powder (Ref. 183-187).

Cadmium chloride injection of 30+ mole/kg also caused interstitial cell tumors of the testes (Ref. 188, 189). No increase in tumors occurred in rats given drinking water containing 5 ppm cadmium acetate. (Ref. 192). No increase in prostate cancer was found in rats and mice given cadmium sulfate by injection or intragastric catheter (Ref. 105-107). Testicular changes and Leydig cell tumors did occur but no prostate neoplasms or pre-neoplastic changes occurred in either rodent species.

The International Agency for Research on Cancer (IARC) reviewed the potential carcinogenicity of cadmium. The IARC review, cited by NIOSH, suggested that the data were insufficient to permit conclusions on whether or not cadmium is carcinogenic.

BASIS OF THE CURRENT STANDARD

The present OSHA standard for cadmium fume is an 8-hour average of 0.1 mg/m³ with a ceiling concentration of 0.3 mg/m³. The standard for cadmium dust is an 8-hour average of 0.2 mg/m³ with a ceiling concentration of 0.6 mg/m³ (29 CFR 1910.1000, Table Z-2). The standard was originally developed in 1941, by the American Standards Association (now American National Standards Institute, or ANSI) as an American Defense Emergency Standard of 1 mg/m for cadmium and its compounds. ANSI revised the standard in 1970 to the present levels (ANSI Z37.5) which was subsequently adopted by OSHA under section 6(a) of the Occupational Safety and Health Act of 1970. The ANSI report briefly reviewed cadmium toxicity but the specific basis for the standard was not stated.

In 1946, the American Conference of Governmental Industrial Hygienists (ACGIH) recommended a Maximum Allowable Concentration (MAC) Value of 0.1 mg/cu m for cadmium, continuing it for several subsequent years but changing the name MAC Values to Threshold Limit Values (TLVs) in 1948 (these 1948-1949 MAC or TLV lists were unpublished but privately circulated). In 1956, the TLV of 0.1 mg/cu m was assigned to CdO fume, rather than Cd. In 1965, a tentative value of 0.2 mg/cu m for cadmium (metal dusts and soluble salts) was added, and changed to a recommended value in 1967. More recently, the ACGIH recommended several changes in the TLVs of cadmium dusts and fumes. In 1970, the TLV of cadmium dusts and salts was continued at 0.2 mg/cu m as a ceiling. In 1973, the ACGIH announced its intent to change the TLV of fume to 0.05 mg/cu m, also as a ceiling. In 1974, the intention to change the TLV of cadmium dusts and salts to 0.05 mg/cu m as a TWA concentration was announced. In 1975, a note was added indicating that cadmium oxide production involved a carcinogenic or co-carcinogenic potential. In a supplement to the 1971 TLV documentation, a review by Bonnell and the report of Tsuchiya were cited as reasons for a lowering of the TLV of cadmium fume to a ceiling con-

centration to 0.05 mg Cd/cu m. The basis for indicating that there is a carcinogenic or co-carcinogenic potential in cadmium oxide production was not stated.

Several foreign countries have set limits for exposure to cadmium. Some of the limits reported by NIOSH are 20 µg/m³ for dust and 10 mg/m³ for fume in Finland; 0.05 mg/m³ total and 0.02 mg/m³ respirable in Sweden; and 0.1 mg/m³ for cadmium oxide in the USSR, Bulgaria, Czechoslovakia, Hungary, Japan, Poland, and Rumania all have adopted 0.1 mg/m³ for cadmium or cadmium oxide.

BASIS FOR THE RECOMMENDED STANDARD

The environmental limit recommended by NIOSH for exposure to cadmium is a time-weighted-average (TWA) concentration of 40 µg/m³ and a 15 minute ceiling limit of 200 µg/m³. A 1967 report by Tsuchiya (Ref. 63), cited by NIOSH, recommended a TWA of 50 µg/m³. This author did state that this limit may only be valid for Japanese workers. A limit of 50 µg/m³ was suggested in another study, by Lauwerys, et al (Ref. 133), which found no effects in workers exposed at 31 µg/m³ and proteinuria and reduced pulmonary function in workers exposed at 66 µg/m³. NIOSH cautions that the presence of toxic effects at the 66 µg/m³ level suggests that a limit of 50 µg/m³ would not have a large safety factor. NIOSH notes further that it is possible that workers exposed at 66 µg/m³ were also exposed to higher concentrations but this is uncertain. A study by Piscator (Ref. 131) found no effects in a group of women workers exposed to less than 100 µg/m³ (mostly about 40 µg/m³). One elderly woman was found to have proteinuria but that was attributed to earlier exposures at higher levels.

Because of the low margin of safety afforded by a limit of 50 µg/m³, NIOSH recommends a limit of 40 µg/m³. NIOSH reports that it appears likely that the threshold for the development of adverse effects on pulmonary function is higher than the threshold for adverse effects on renal function, this has not been clearly established. The recommended limit is intended to protect against the development of renal damage. The recommended medical surveillance protocol for exposed employees includes examinations of both renal and pulmonary function.

The recommended ceiling limit of 200 µg/m³ for 15 minutes is based on evidence of acute pulmonary disease at 2,500-2,900 mg-min/m³ (about 5 mg/m³ for 8 hours). NIOSH reported that there have been cases of exposures up to 25 mg/m³ without acute pulmonary disease but such instances may have been only very brief exposures or exposures may have been to primarily non-respirable dust. Another study NIOSH cites, reported acute cadmium intoxication at an estimated concentration range of 10-140 µg/m³ for a cumulative exposure of almost 10 hours. Because of the contradictory evidence, NIOSH recommends a ceiling limit based on what NIOSH be-

lieves to be realistic limitations on excursions and the belief that acute pulmonary disease, possibly fatal, can develop at around 2500 mg-min/m³.

Although there is some evidence of the teratogenic effect of cadmium in both experimental animals and humans (see Effects of Exposure), the data, particularly in humans, NIOSH believes to be incomplete. NIOSH states that human fetal abnormalities may be related to zinc retention in the mother caused by cadmium absorption which created a zinc deficiency in the fetus. Injection of zinc into pregnant rats has been reported to exert a protective effect on the fetuses against the development of cadmium-induced abnormalities (Ref. 177, 178). NIOSH, therefore, concludes that reduction of cadmium exposure to a level that does not result in abnormal zinc requirements should allow sufficient zinc to the fetus for normal development. This has not been proven and NIOSH suggests further research be done.

The data on the potential carcinogenicity of cadmium is contradictory. Among men working with cadmium, small numbers of cases of prostatic cancers, mainly in the elderly, have been found (Ref. 85, 96, 97). Other epidemiologic studies (Ref. 101, 102) and animal studies (Ref. 105-7) have not found excess prostate cancers. These studies are considered inadequate by NIOSH as the human subjects were not known to have had cadmium exposure and the animals were not given large enough doses of cadmium. The findings of excess total cancers and lung cancers among cadmium smelter workers is confounded by the concomitant exposure to arsenic (Ref. 97.) Due to the uncertainties of the presently available data on the carcinogenicity of cadmium, NIOSH did not feel that a limit based on this effect was appropriate.

The NIOSH recommended limits for cadmium are based on total dust sampling and not limited to only the respirable portion. NIOSH feels that large particles of cadmium and its compounds, while not reaching the alveoli, may still be toxic because they may be cleared from the upper respiratory tract and swallowed and be absorbed through the gastrointestinal tract.

The past and present standards for cadmium have separate limits for dust and fume due to the greater penetrability in the lungs of the smaller fume particles. The recommended standard does distinguish different forms of cadmium. NIOSH states that the evidence of proteinuria in populations exposed to either dust or fume demonstrates that the effects found are comparable at similar concentrations of either form of cadmium. NIOSH feels that the data does not show that a given amount of cadmium is more toxic as small particles than as large particles; therefore, a standard expressed as total dust is an effectively lower standard and is therefore more protective. Lack of good data precludes NIOSH from recommending

different standards for different compounds of cadmium based on their individual toxicities.

PUBLIC PARTICIPATION

In addition to the general issues, listed under Introduction, on which comment and information are requested, OSHA requests comment and information on the following specific issues raised by the NIOSH recommendations for a standard for occupational exposure to cadmium:

The exposure limit recommended by NIOSH is based on protection against kidney damage—is this a correct approach?

Are there other significant toxic effects of cadmium not discussed in the NIOSH criteria document?

Is the evidence sufficient for cadmium to be considered a teratogen and/or a carcinogen? If so, what steps should be taken to protect exposed workers?

Should all forms of cadmium be considered in a single exposure limit, as recommended by NIOSH, or should separate standards be set for dust and fume?

Should the cadmium standard be expressed in terms of total particulate, as recommended by NIOSH, or should it be based upon only the respirable fraction?

Are the NIOSH recommendations for limiting employee exposure to cadmium technologically and economically feasible? If not, what alternatives are appropriate?

Are there effective substitutes which can be used to replace cadmium in some of its applications?

Is the NIOSH estimate of exposed workers (100,000) accurate?

Are there employee groups not listed which are potentially exposed to cadmium?

The NIOSH criteria document, all references, and comments on the document from the NIOSH review consultants and other groups (Tab Document) are available for review and copying at the OSHA Technical Data Center at the address listed below for the Docket Officer. The NIOSH recommendations are reprinted in Appendix B.

Comments should be addressed to Docket Officer, Docket HO57, Department of Labor—OSHA, Room N3620, 3rd and Constitution Avenue, NW., Washington, D.C. 20210, and should be submitted by March 20, 1977.

Dated at Washington, D.C., this 19th day of January 1977.

MORTON CORN,
Assistant Secretary of Labor.

APPENDIX A—CRITERIA DOCUMENTS TRANSMITTED TO OSHA

Asbestos: Received January 21, 1972. As a result of a petition to OSHA, an Emergency Temporary Standard on asbestos had been issued on December 7, 1971. Current standard published on June 7, 1972. Proposed revision published October 9, 1975. New NIOSH recommendations received by OSHA on December 18, 1976.

Hot Environments: Received June 30, 1972. OSHA Advisory Committee established on subject on January 24, 1973. Committee recommendations submitted January 11, 1974. Inadequate information on which to establish a mandatory standard.

Beryllium: Received June 30, 1972. Proposed standard published October 17, 1976.

Carbon Monoxide: Received August 9, 1972.

Noise: Received August 10, 1973. OSHA Advisory Committee established on subject on January 26, 1973. Committee recommendations submitted December 20, 1973. Proposed revision to existing OSHA noise standard published on October 24, 1974. Hearings held in June and July 1975, and September and October 1976.

Ultraviolet Radiation: Received December 20, 1972.

Inorganic Lead: Received January 5, 1973. Proposed standard published October 3, 1975.

Coke oven Emissions: Received February 28, 1973. Advisory Committee established August 12, 1974. Committee recommendations submitted May 24, 1975. Proposed standard published July 24, 1975. Final standard promulgated October 22, 1976.

Chromic Acid: Received July 17, 1973. (see Hexavalent Chromium).

Toluene: Received July 23, 1973. Proposed standard published October 6, 1975.

Toluene Dithiocyanate: Received July 13, 1973.

Trichloroethylene: Received July 23, 1973. Proposed standard published October 20, 1975.

Inorganic Mercury: Received August 13, 1973.

Inorganic Arsenite: Received January 21, 1974. Proposed January 21, 1975. Hearings held April 1976 and September 1976. Revised Criteria Document received June 23, 1973.

Sulfur Dioxide: Received February 11, 1974. Proposed November 24, 1975.

Sulfuric Acid: Received June 6, 1974.

Ammonia: Received June 15, 1974. Proposed November 25, 1975.

Benzene: Received July 24, 1974.

Chloroform: Received September 11, 1974.

Cotton Dust: Received September 26, 1974. Proposed December 28, 1976.

Silica: Received November 11, 1974.

Identification System for Hazardous Materials: Received December 20, 1974. Advisory Committee established September 19, 1974. Committee recommendations submitted May 24, 1975.

Xylene: Received May 30, 1975.

Inorganic Fluorides: Received June 30, 1975.

Sodium Hydroxide: Received October 9, 1976.

Zinc Oxide: Received October 10, 1976.

Hexavalent chromium: Received December 3, 1975. Combined as single OSHA project with Chromic Acid.

Carbon Tetrachloride: Received January 23, 1976.

Isopropyl Alcohol: Received March 9, 1976.

Methylene Chloride: Received March 9, 1976.

Hydrogen Fluoride: Received March 9, 1976.

Phosgene: Received March 3, 1976.

Nitric Acid: Received March 9, 1976.

Ethylene Dichloride: Received March 9, 1976.

Methyl Alcohol: Received March 23, 1976.

Nitrogen Dioxide: Received March 23, 1976.

Chlorine: Received May 26, 1976.

Methyl Chloroform (1,1,1 Trichloroethylene): Received July 1, 1976.

Perchloroethylene (Tetrachloroethylene): Received July 1, 1976.

Acetylene: Received June 30, 1976.

Malathion: Received June 30, 1976.

Phenol: Received June 30, 1976.

Parathion: Received June 30, 1976.

Carbon Dioxide: Received August 11, 1976.

Cadmium: Received August 24, 1976.

Epichlorohydrin: Received September 17, 1976.

Allyl Chloride: Received September 31, 1976.

Methyl Parathion: Received September 30, 1976.

Carbaryl: Received September 30, 1976.

Cyanide and Cyanide Salts: Received October 5, 1976.

Organotin Compounds: Received November 12, 1976.

Acrylamide: Received December 1, 1976.

Boron Trifluoride: Received December 17, 1976.

Formaldehyde: Received December 30, 1976.

APPENDIX B

1. RECOMMENDATIONS FOR A CADMIUM STANDARD

The National Institute for Occupational Safety and Health (NIOSH) recommends that worker exposure to cadmium in the workplace be controlled by adherence to the following sections. The standard is designed to protect the health and safety of workers for up to a 10-hour workday, 40-hour week over a working lifetime. Compliance with all sections of the standard should prevent adverse effects of exposure to cadmium on the health and safety of workers. The standard is measurable by techniques that are valid, reproducible, and available to industry and government agencies. Sufficient technology exists to permit compliance with the recommended standard. The criteria and the standard will be subject to review and revision as necessary. "Cadmium" refers to elemental cadmium and all cadmium compounds. An "action level" is defined as half the time-weighted average concentration environmental limit of cadmium. "Occupational exposure to cadmium" is defined as exposure to cadmium at a concentration greater than the action level. Exposure at lower environmental concentrations will not require adherence to the following sections, except for Section 6(b) and 7(d).

Section 1 Environmental (Workplace air)—(a) Concentration. Occupational exposure to cadmium shall be controlled so that workers are not exposed to cadmium at a concentration greater than 40 micrograms per cubic meter of air (40 µg Cd/cu m determined as a time-weighted average (TWA) exposure concentration for up to a 10-hour workday, 40-hour workweek, or at a ceiling concentration greater than 300 (µg Cd/cu m for any 15-minute sampling period).

(b) Sampling and analysis. Sampling in the work environment shall be performed by the method provided in Appendix I or by a method with at least equivalent efficiency. Samples shall be analyzed by the method provided in Appendix II or by a method shown at least equivalent in precision and sensitivity.

Sec. 2 Medical. Medical monitoring shall be made available to all workers subject to occupational exposure to cadmium.

(a) Preplacement examinations shall be made available to new or reassigned employees prior to job placement, and, within 6 months of the promulgation of a standard based on these recommendations, to employees already engaged in work involving exposure to cadmium.

Preplacement examinations shall include a comprehensive work and medical history, a 14" x 17" P.A. chest x-ray, measurement of forced vital capacity (FVC) and forced expiratory volume during the first second (FEV₁), measurement of blood pressure, blood analysis (blood urea nitrogen, complete blood count, and serum glutamic oxaloacetate transaminase or other liver enzymes), and urinalysis (microscopic examination, sugar determination, quantitative protein determination, and specific gravity measurements). A judgment of the worker's ability to work in positive or negative pressure respirators shall be made.

The method for protein determination in urine shall be quantitative and capable of detecting low molecular weight protein (see Appendix III). Determination of urine cadmium levels is also recommended.

(b) Periodic examinations shall also be made available, except for urine protein determinations, which shall be made available every 4 months. These examinations

shall be offered yearly, or as otherwise directed by the responsible physician.

These periodic examinations shall include interim work and medical history, urinalysis (with quantitative protein determinations every 4 months) pulmonary function tests (FVC and FEV₁), and blood pressure. Chest radiographs shall be taken if judged necessary by the responsible physician.

In addition, blood analysis, palpation of the prostate in male workers over 40 years old, and monitoring of urine cadmium concentrations are also recommended. If the concentration of cadmium in the urine rises above 10 (µg/liter, an investigation of the cause, such as environmental exposures, personal and industrial hygiene practices, and nonoccupational exposure, should be conducted.

Reassessment of occupational exposure, work practices, and personal habits shall be undertaken if FVC or FEV₁ becomes reduced 15 percent or more or the ratio FEV₁/FVC is reduced 10 percent or more than would be expected from the age and smoking habits of the person examined. If persistent symptoms of respiratory tract disease develop, if there are frequent upper or lower respiratory infections, or if persistent proteinuria or other abnormal laboratory or clinical findings relating to cadmium toxicity develop.

Smokers should be counseled on their possibly increased risk of chronic respiratory disease.

(c) At termination of or transfer from employment involving occupational exposure to cadmium, a comprehensive examination including the components of (a) above shall be offered.

(d) Pertinent medical records shall be retained for 30 years after the last occupational exposure to cadmium. These records shall be made available to the designated medical representatives of the Secretary of Labor, of the Secretary of Health, Education, and Welfare, of the employer, and of the employee or former employee.

Sec. 3 Labeling and Posting—(a) Containers. Shipping and storage containers or package containing cadmium or cadmium compounds shall bear the following label:

DANGER!

CONTAINS -----

POISONOUS FUMES MAY BE FORMED ON HEATING

HARMFUL IF INHALED OR SWALLOWED

AVOID CONTACT WITH SKIN, EYES, AND CLOTHING

WASH HANDS THOROUGHLY AFTER HANDLING

Avoid breathing fume, dust or mist

Keep container closed

Use only with adequate ventilation

(b) Work areas. Locations or areas where cadmium dust or fumes are likely to be generated shall be designated with clearly visible warning signs as shown below:

DANGER!

CADMIUM (Cd)

Cadmium Fume (or Dust) Areas

Authorized Personnel Only

Breathing Fume (or Dust) May Cause Immediate or Delayed Injury

No Smoking

Respirators Are Located -----

1 Complete by inserting "cadmium" or
2 Give location of respirators.

This sign shall be printed in English and in the predominant language of non-English-speaking workers. All employees shall be trained and informed of the hazards and the hazardous areas. All illiterate workers shall receive special attention.

Sec. 4. *Personal Protective Equipment.* Engineering controls shall be used if needed to maintain airborne cadmium concentrations at or below the limits recommended in Section 1. Compliance with these workplace environmental limits by the use of respirators is permitted only during emergencies. When use of a respirator is permitted, it shall be selected and used in accordance with the following requirements:

(a) For the purpose of determining the type of respirator to be used, the employer shall measure the concentrations of cadmium in the workplace initially and thereafter whenever control, process, operation, work-site, or climate changes occur that are likely to increase the concentration of airborne cadmium.

(b) The employer shall ensure that no worker is exposed to cadmium in excess of the recommended limits because of improper respirator selection, fit, use, or maintenance.

(c) A respiratory protection program meeting the requirements of 29 CFR 1910.134, which incorporates the American National Standard Practices for Respiratory Protection, Z88.2-1969, shall be established and enforced by the employer.

(d) The employer shall provide respirators in accordance with Table I-1 and shall ensure that employees use the respirators provided in a proper manner when wearing of respirators is required.

(e) Respirators selected from those described in Table I-1 shall be those approved under the provisions of 30 CFR Part 11.

(f) The employer shall ensure that employees are properly instructed in the use of respirators assigned to their use and on how to test for leakage, proper fit, and proper operations.

(g) Respirators specified in Table I-1 for use in atmospheres of higher concentrations of airborne cadmium may be used in atmospheres of lower cadmium concentrations.

(h) The employer shall establish and conduct a program of cleaning, sanitizing, inspecting, maintaining, repairing, and storing of respirators, to ensure that employees are provided with clean respirators that are in good operating condition.

(i) The employer shall periodically monitor the use of respirators to ensure that the proper type of respirator is worn, to evaluate the effectiveness of the respiratory protection program, and to eliminate any deficiencies in use and care of respirators.

Table I-1.—Respirator selection guide

Air concentrations	Respirator type
Less than or equal to 0.4 mg/m ³ .	(1) Half-mask respirator with high efficiency filter(s). (2) Type C demand type (negative pressure) supplied air respirator with half-mask facepiece.
Less than or equal to 2.0 mg/m ³ .	(1) Full facepiece respirator with high efficiency filter(s). (2) Type C demand type (negative pressure) supplied air respirator with full facepiece. (3) Self-contained breathing apparatus with full facepiece in demand mode (negative pressure).

Air concentrations
Less than or equal to 40 mg/m³.

40 mg/m³ or greater or unknown.

Respirator type

- (1) Powered air-purifying (positive pressure) respirator with high efficiency filters.
- (2) Type C continuous flow (positive pressure) supplied air respirator.
- (1) Combination supplied air respirator, pressure-demand type, with auxiliary self-contained air supply.
- (2) Self-contained breathing apparatus with full facepiece in positive pressure mode.

Sec. 5 *Inform Employees of Hazards from Cadmium.*—(a) Workers initially assigned or reassigned to jobs involving occupational exposure to cadmium shall be informed of the hazards, symptoms of overexposure (including information on the characteristics of onset and stages of illness), appropriate procedures to be taken in the event of an emergency, and precautions to ensure safe use and to minimize exposure. They shall be advised of the availability of relevant information, including that prescribed in (c) below. This information shall be accessible to each worker occupationally exposed to cadmium.

(b) A continuing education program, conducted by a person or persons qualified by experience or special training, shall be instituted to ensure that all workers have current knowledge of job hazards, proper maintenance procedures and cleanup methods, and that they know how to use respirators correctly. It shall include a description of the general nature of the medical surveillance procedures and why it is advantageous to the worker to undergo these examinations.

(c) Required information shall be recorded on a "Material Safety Data Sheet" as specified in Appendix IV or on any other form approved for the purpose by the Occupational Safety and Health Administration, U.S. Department of Labor.

Sec. 6 *Work Practices.*—(a) *Exhaust Systems.* Operations creating workplace exposure to cadmium shall be enclosed to the maximum extent practicable and be provided with local exhaust ventilation unless appropriate air sampling and analysis have demonstrated that concentrations are at or below the environmental limits. Methods other than enclosure and ventilation for meeting exposure limits to cadmium may be used if they bring concentrations in workplace air to or below the environmental limits. Effluent air shall be cleaned to meet any emission standards that may become promulgated. Air from the exhaust ventilation system shall not be recirculated into the workplace.

Enclosures, exhaust hoods, and ductwork shall be kept in good repair so that design airflow is maintained. Airflow shall be measured at each hood at least semiannually and preferably monthly. Continuous airflow indicators are recommended, such as water or oil manometers properly mounted at the juncture of fume hood and dust throat (marked to indicate acceptable airflow). A log showing design airflow and results of semiannual inspections shall be kept.

(b) *Welding, Brazing, and Thermal Cutting.* Welding, brazing, or thermal cutting of material containing cadmium shall be performed using local exhaust ventilation demonstrated by air sampling and analysis to keep cadmium concentrations within the limits of Section 1. For single operations where local exhaust ventilation is not avail-

able, where air sampling has not been performed, or where air sampling has demonstrated a likelihood of overexposure to cadmium fume or dust, respirators shall be provided and worn as specified in Section 4.

Where molten cadmium is used or formed, temperatures should be kept as low as possible consistent with the requirements of the operation to prevent excessive fume generation. Additions of cadmium should be made in the manner generating the least fume. Wherever possible this should be accomplished by automatic controls, with recording of temperature and use of alarms or indicators for higher temperature.

(c) *Emergency Procedures.* Emergency procedures shall be established for any event which may result in substantial release of airborne cadmium. Such procedures shall include provision for appropriate respirators as specified in Section 4.

Specific emergency procedures shall be designed for fires, to protect both in-plant workers and firefighters.

(d) *Work Clothing.* Workers shall wear work clothing consisting of at least of hat, shirt, or blouse, pants or skirt, and shoes. Work clothing and street clothing shall be exchanged at the beginning and the end of each workday, so that work clothing will not be worn outside the workplace. The employer shall provide for proper laundry of clothing and shall instruct laundresses on procedures to be taken to avoid inhalation of cadmium-containing dusts.

Sec. 7. *Sanitation Practices.*—(a) Where there is cadmium-containing dust, cleaning should be performed by vacuum pickup or wet mopping. No dry sweeping or blowing shall be permitted.

(b) Emphasis shall be placed upon prompt cleanup of spills, repair of equipment and leaks, proper storage of materials, and collection of cadmium-containing dust.

(c) Cadmium-containing and cadmium-plated metal parts should be kept separate from parts not containing cadmium and marked appropriately so that accidental exposures resulting from welding and cutting will not occur.

(d) Facilities shall be maintained to protect foodstuffs and food consumption areas from contamination by materials containing cadmium. Food storage, handling, and consumption shall be separate from cadmium work areas. Smoking or carrying uncovered tobacco or tobacco products in cadmium work areas shall be prohibited.

(e) Adequate handwashing and shower facilities shall be provided. Workers shall wash their hands before eating or before using tobacco to prevent their absorbing additional amounts of cadmium compounds.

Sec. 8 *Monitoring and Recordkeeping.* Workers are not considered to be occupationally exposed to cadmium if environmental concentrations, as determined on the basis of an industrial hygiene survey to be performed within 90 days of the promulgation of a standard, do not exceed the action level, i.e., half the recommended TWA environmental limit, or if there is no operation, storage, or handling of cadmium in any form or contamination of workplace air by cadmium from other sources. These industrial hygiene surveys shall be repeated at least every 3 years and within 30 days after any process or operating change likely to result in increases of airborne concentrations of cadmium. Records of these surveys, including the basis for concluding that airborne concentrations of cadmium are at or below the action level, shall be maintained until the next survey has been completed.

The following requirements apply to occupational exposure to cadmium, i.e., to work-

place where the action level is exceeded.

(a) *Personal monitoring.* A program of breathing zone or personal monitoring shall be instituted to identify and measure the exposure of all employees occupationally exposed to cadmium. This sampling and analysis shall be conducted every 3 months on at least 25 percent of the workers so that each worker's exposure is measured at least every year; this frequency and fraction of employees sampled may be different if so directed by a professional industrial hygienist. Sufficient numbers of samples shall be collected and analyzed to permit construction of valid estimates of the TWA and ceiling concentration exposures of workers during each workshift; the number of TWA and ceiling concentration determinations for an operation shall be based on such factors as mobility and job functions of workers in that operation. If monitoring of any worker shows exposure in excess of either recommended environmental limit, additional monitoring shall be promptly initiated. If confirmed, control procedures shall be instituted as soon as possible; these may precede and obviate confirmatory monitoring if the employer desires. Affected employers shall be advised that exposures have been excessive and be notified of the control procedures being implemented. Monitoring of these employees' exposure shall be conducted at least as often as every 30 days and shall continue until successive samplings at least a week apart confirm that exposure no longer exceeds recommended limits. Normal monitoring may then be resumed.

(b) *Recordkeeping.* Environmental monitoring records shall be maintained for at least 20 years. These records shall include methods of sampling and analysis used, types of respiratory protection used, and TWA and ceiling concentrations found. Each employee shall be able to obtain information on his own environmental exposures. Environmental records shall be made available to designated representatives of the Secretary of Labor and of the Secretary of Health, Education and Welfare.

Pertinent medical records shall be retained for 20 years after the last occupational exposure to cadmium. Records of environmental exposures applicable to an employee should be included in the employee's medical records. These medical records shall be made available to the designated medical representatives of the Secretary of Labor, of the Secretary of Health, Education and Welfare, of the employer, and of the employee or former employee.

[FR Doc 77-2379 Filed 1-19-77; 5:06 pm]

**Occupational Safety and Health
Administration**

[V-77-1]

**RICHMOND ENGINEERING COMPANY,
INC.**

**Application for Variance and Interim
Order; Grant of Interim Order**

I. *Notice of application.* Notice is hereby given that RECO Constructors, Inc., Box 25189, 7th & Hospital Streets, Richmond, Virginia 23280 has made application pursuant to section 6(d) of the Occupational Safety and Health Act of 1970 (84 Stat. 1596; 29 U.S.C. 655) and 29 CFR 1905.11 for a variance and interim order, pending a decision on the application for a variance, from the standards prescribed in 29 CFR 1926.451 (a) (4), (5), and (10) dealing with scaffolds.

The place of employment affected by the application is as follows:

Richmond Engineering Company, Inc., 7th & Hospital Streets, Richmond, Virginia 23280.

The applicant certifies that employees who would be affected by the variance have been notified of the application by giving a copy of it to their authorized employee representative, and by posting a copy at all places where notices to employees are normally posted. Employees have also been informed of their right to petition the Assistant Secretary for a hearing.

Regarding the merits of the application, the applicant contends that it is providing a place of employment as safe as that required by § 1926.451(a) (4), (5), and (10). Section 1926.451(a) (4) and (5) read as follows:

(4) Guardrails and toeboards shall be installed on all open sides and ends of platforms more than 10 feet above the ground or floor, except needle beams scaffolding and floats (see paragraphs (p) and (w) of this section). Scaffolds 4 to 10 feet in height having a minimum horizontal dimension in either direction of less than 45 inches, shall have standard guardrails installed on all open sides and ends of the platform.

(5) Guardrails shall be 2 x 4 inches, or the equivalent, approximately 42 inches high, with a midrail, when required. Supports shall be at intervals not to exceed 8 feet. Toeboards shall be a minimum of 4 inches in height.

The applicant states that its business is of a specialized nature involving steel plate erection by members of the boiler-maker's trade.

The applicant contends that the scaffolds used in building tanks are mobile and are frequently raised as are the tank sections, in order to position the next set of steel plates. The scaffolds used do not have toeboards because tools are placed in well designed "loose tool" containers provided for that purpose. In addition, the applicant proposes to rope off the area directly below and in close proximity to the scaffold and to permit only those employees, and tools currently being used by them, on the scaffolds. As a further precaution, a taut wire is installed midway between the innermost plank face of the scaffold platform and the tank face. The applicant states that because the scaffolds must be moved frequently, it would be more hazardous to constantly remove and replace toeboards.

The applicant also proposes to place guardrail supports at 10'6" intervals in lieu of the 8' requirement of § 1926.451 (a) (5). This would allow consistent bracket spacing since the applicant further desires to use 10'6" spans for its scaffold planking although § 1926.451(a) (16) allows a maximum span of 10'. The planks proposed to be used are rough full-dimensioned 2" x 12" x 12' planks of Douglas Fir or Southern Yellow Pine of select structural grade. The Douglas Fir has a fiber stress of 1,900 and a modulus of elasticity of 1,900,000, while the Southern Yellow Pine has a 2,500 fiber stress and a modulus of elasticity of 2,000,000. The applicant contends that

the scaffolds he is using are safe, even though the span is one-half foot longer than the maximum length allowed, because of the increased strength of the wood.

A copy of the application will be made available for inspection and copying upon request at the Office of Variance Determination, U.S. Department of Labor, Room N-3668, 200 Constitution Avenue, NW., Washington, D.C. 20210, and at the following Regional and Area Offices:

U.S. Department of Labor, Occupational Safety and Health Administration, Gateway Building—Suite 15220, 3535 Market Street, Philadelphia, Pennsylvania 19104.
U.S. Department of Labor, Occupational Safety and Health Administration, Federal Building (P.O. Box 10186) Room 8018, 400 North 6th Street, Richmond, Virginia 23240.

All interested persons, including employers and employees who believe they would be affected by the grant or denial of the application for variance are invited to submit written data, views, and arguments relating to the pertinent application no later than February 28, 1977. In addition, employers and employees who believe they would be affected by a grant or denial of the variance may request a hearing on the application no later than February 28, 1977, in conformance with the requirements of 29 CFR 1905.15. Submission of written comments and requests for a hearing should be in quadruplicate, and must be addressed to the Office of Variance Determination at the above address.

II. *Interim Order.* It appears from the application for variance and interim order that the proposed scaffolding described in the application, with certain variations, will provide a place of employment as safe as those which would prevail if the applicant were to comply fully with 29 CFR 1926.451(a) (4), (5), and (10). It further appears that an interim order is necessary, pending a decision on the application, in order to prevent undue hardship to the applicant and its employees. Therefore, it is ordered, pursuant to section 6(d) of the Occupational Safety and Health Act of 1970, and 29 CFR 1905.11(c), that the Richmond Engineering Company, Inc., be, and is hereby authorized to use scaffolds in accordance with the following conditions, in lieu of complying with the toeboard and span requirements in § 1926.451(a) (4), (5), and (10):

(a) The applicant's loose tools and equipment shall be kept in well-designed tool containers. This does not include flut bars, key plates, key channels, or long handled maul which may be placed on the scaffold plank during the time they are required for work. The loose tool containers shall be secured to prevent their upset or dislodgment from the scaffold area.

(b) Areas beneath and far enough away from the base of the scaffold to contain anything that falls from above shall be roped off and posted with clearly visible signs stating: "Danger Overhead Work."

(c) The space between the innermost edge of the scaffold platform and the curved plate structure of the tank shell shall not exceed 12" without protective measures. A taut wire rope supported on scaffold brackets at plank level may be used to divide any space exceeding 12" in lieu of using a guardrail or tie-off system.

(d) Not more than three employees shall be working on a 10'6" span of scaffold planking at any time.

(e) The maximum distance between brackets to which scaffolding and guardrail supports are attached shall be 10'6". These brackets shall be welded to the steel plates.

(f) Scaffold planks of rough full-dimensioned 2"×12"×12' Douglas Fir or Southern Yellow Pine of select structural grade or equivalent planking shall be used. The Douglas Fir shall have at least a 1,900 fiber stress and 1,900,000 modulus of elasticity, while the Yellow Pine shall have at least 2,500 fiber stress and 2,900,000 modulus of elasticity. Three planks with full thickness 2"×10"×12' dimensions may be used in lieu of two 2"×12"×12' planks provided that they are clamped or bonded together at the midpoint of the span, in order to spread the weight of the employees.

(g) All planking shall be secured from movement or overlapped in accordance with § 1926.451(a)(12).

(h) Guardrails shall be constructed of taut wire rope, and shall be supported by angle irons attached to brackets welded to the steel plates. These guardrails shall be at least of equivalent strength, stability and height as those required for the 8 foot span of 2" x 4" wood rails by 29 CFR 1926.451(a)(5). Guardrail supports shall be located at no greater than 10'6" intervals.

Richmond Engineering Company, Inc., shall give notice of this interim order to employees affected thereby, by the same means required to be used to inform them of the application for a variance.

Effective date: This interim order shall be effective as of January 28, 1977, and shall remain in effect until a decision is rendered on the application for variance.

Signed at Washington, D.C., this 19th day of January 1977.

B. M. CONKLEW,
Deputy Assistant
Secretary of Labor.

[FR Doc.77-2826 Filed 1-27-77;8:48 am]

FEDERAL REGISTER, VOL. 42, NO. 19—FRIDAY, JANUARY 28, 1977

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News

United States
Department
of Labor



Office of Information

Washington, D.C. 20210

OCCUPATIONAL SAFETY & HEALTH
ADMINISTRATION

USDL-- 77-75

Contact: James Foster
Office: (202) 523-8151
After Hours: (703) 941-6798

FOR RELEASE: Immediate
Monday, January 24, 1977

OSHA ANNOUNCES PROPOSED CANCER POLICY

A draft of proposed regulations on worker exposure to cancer-causing chemicals that would speed the rulemaking process was made public today by the U.S. Department of Labor.

Bert Concklin, deputy assistant secretary of labor for the Department's Occupational Safety and Health Administration (OSHA), said the proposed rules are intended to identify, classify and regulate potential carcinogens in American workplaces. If adopted, the rules would provide three uniform job health standards to be used under differing circumstances as OSHA moves to regulate potential carcinogens.

The three uniform standards would each contain provisions OSHA has learned are common to most job health standards. By using these uniform standards, rulemaking could be speeded for each carcinogen being dealt with.

Concklin said the proposed rules are based on three propositions:

--That the term "carcinogen" must be defined for purposes of regulatory activity:

--That, as a policy matter, a toxic material confirmed as a carcinogen in a mammalian test animal species is to be treated as posing a carcinogenic risk to humans.

--That when OSHA is dealing with an identified carcinogen, the permissible worker exposure level would be set as low as feasible, or in certain cases would not be permitted at all. This is based on the general policy that there is

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presently no means to determine a safe exposure level to a known carcinogen.

In dealing with a specific carcinogen, Concklin added, OSHA would rely on evidence from human epidemiological studies, animal studies, or both. The extent to which such data are conclusive would permit OSHA to classify the substance as a "confirmed" carcinogen (classification I), a "suspect" carcinogen (classification II), or neither (classification III). Classification III agents would require further analysis of available data.

The classification of a carcinogen would then trigger appropriate regulatory action. Classification I agents would be regulated by an emergency temporary standard.

A category II classification would result in developing a permanent health standard following normal rulemaking procedures. Classification III agents would cause OSHA to request from other federal agencies, including NIOSH, EPA, and NCI, any additional information which could have a bearing on reconsideration of the classification.

Each of the three approaches would include certain provisions common to job health standards issued by OSHA in the past. These would include, among others, rules on monitoring and measuring workplace concentrations of the carcinogen, medical surveillance requirements, personal protective measures, recordkeeping requirements, personal hygiene, sanitation and housekeeping measures and employee training.

Concklin noted that with these uniform measures in effect, rulemaking for a specific carcinogen would thus be limited to such issues as the lowest feasible exposure level, whether the substance was properly classified, and environmental impact issues.

"We recognize that this approach marks a departure from OSHA's usual pattern of setting job health standards on a substance-by-substance basis," Concklin said.

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"However, we believe this new system will better enable us to protect the worker by effectively grouping hazards of a similar nature to facilitate standards setting in a more timely and consistent manner."

Concklin said the proposed regulations will be presented later this week to the National Advisory Committee for Occupational Safety and Health (NACOSH) for review and recommendations.

NACOSH is a 12-member group made up of representatives of employees, employers, the safety and health professions and the public. Its purpose is to advise and recommend to the Secretaries of Labor and Health, Education, and Welfare national policy on job safety and health matters.

Additional details are contained in the attached summary sheet.

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SUMMARY SHEET

IDENTIFICATION, CLASSIFICATION, AND REGULATION OF OCCUPATIONAL CARCINOGENS

I. Background

Heart disease and cancer--the fourth and eighth leading causes of death, respectively, in 1900--now lead the nation's list of killers. In 1900, these two diseases were responsible for only 12 percent of deaths; today, they account for more than one-half of U.S. mortality. Annual death rates from cancer rose from 64 percent per 100,000 population in 1900 to 168 in 1970.

Cancer killed a reported 358,400 U.S. citizens in 1974--over 1,000 persons per day. Over one million are under treatment for the disease, and each year 900,000 new cases are diagnosed. Of these, about one-third are skin cancers--usually treatable, and with no significant impact on life expectancy; the other 600,000, however, are serious and are potentially fatal. The American Cancer Society now estimates that 25 percent of the United States population will ultimately develop some form of cancer.

The economic and social impacts of cancer in the United States are massive and hard to estimate. An estimated \$1.8 billion per year is spent solely for hospital care of cancer patients. To these direct expenditures must be added indirect costs, such as the estimated 1.8 million work years lost to the national economy and to family income by unemployed or underemployed cancer victims. One estimate cited by the General Accounting Office of the United States Congress is that the annual cost of cancer is \$15 billion, of which \$3-5 billion is attributable to direct care and treatment and the remainder attributed to the loss of earning power and productivity.

Most prominent of the causes of cancer are believed to be genetic and environmental factors. Today, there is growing recognition that 60 to 90 percent of all cancer may be related to environmental factors. Cancer rates vary significantly through the United States. In general, however, states with high rates are the industrial states. It has long been known that densely populated and industrialized areas have higher death rates from many causes than nearby rural areas.

The extent to which the observed incidence and rise in incidence of cancer are attributable to manmade chemicals cannot be estimated with any precision, however, but the tragic effects are. Recognition by cancer specialists that the majority of human cancers are influenced by environmental factors is of extraordinary significance to OSHA--it means that most human occupational cancers may be preventable if the causative agents can be identified and human exposure to them eliminated or minimized.

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II. The Regulatory Dilemma

Any decision to regulate carcinogens is obviously complex. And with the increasing number of environmental chemicals, the number of carcinogens also increase, together with the size and complexity of OSHA's rulemakings. In its five year history, OSHA has concluded only 4 rulemaking proceedings concerning carcinogens, namely the asbestos standard in 1972, the carcinogen standard in January 1974 (regulating 14 substances), the vinyl chloride standard in October 1974 and the coke oven emissions standard in October 1976. At the outset, OSHA notes that 1,500 agents have been identified by the National Institute for Occupational Safety and Health ("NIOSH") as being "suspect carcinogens". In other words, NIOSH has found some scientific evidence, admittedly of varying quality, identifying those substances as having potential carcinogenic activity in humans or in laboratory test animals. Yet, OSHA has completed regulatory activity for only 17 of those substances. Thus, we believe it is necessary to devise a system for regulatory action which will assure a consistency of approach in regulating carcinogens, a speedy approach and an approach which will limit the size of OSHA's rulemakings which have grown far beyond the ability of OSHA's staff to handle by the present case-by-case approach.

III. Summary of Proposed Regulatory Policy

OSHA has drafted for review by its National Advisory Committee for Occupational Safety and Health, a proposed set of regulations to identify, classify, and regulate potential carcinogens in American workplaces. The proposal incorporates several policy considerations derived from OSHA's experience to date in applying its regulatory obligations to the issue of carcinogens. These policy considerations include:

1. That the term "carcinogen," although perhaps difficult to define precisely as a matter of science, must be defined for purposes of regulatory activity.
2. That a toxic material confirmed as a carcinogen in animal tests must be treated, as a policy matter, as posing a carcinogenic risk to man.
3. That there is presently no means to determine a "safe" exposure level to a carcinogen; hence, for regulatory purposes, it will be assumed that no safe level exists.
4. That in regulating employee exposure to a carcinogen, OSHA will set the permissible exposure limit as low as feasible.
5. That where suitable substitutes for a carcinogen are found to be less hazardous to the worker, no occupational exposure to the carcinogen will be permitted.

The proposal would permit any interested party to submit information from human or animal studies to establish the carcinogenicity of a toxic material. OSHA would then be required, within a specified brief period, to classify the toxic material as to its carcinogenicity based on the criteria set forth. The degree of conclusiveness of such data will permit classification of the substance as a "confirmed" (Category I Toxic Material) or a "suspect" (Category II Toxic Material) carcinogen, or neither (Category III Toxic Material) where further data is needed. Classification of a "confirmed" or "suspect" carcinogen would be followed immediately by specific regulatory action as provided in this proposal.

IV. Classification of Carcinogens

Receipt of information concerning a potential occupational carcinogen will be noted in the Federal Register and public comment invited. Within 30 days from the close of the comment period, OSHA in consultation with NIOSH will classify the substance and announce that classification in the Federal Register. The following criteria are proposed to be used in classifying carcinogens.

A. Category I Toxic Materials

A substance will be classified as a Category I Toxic Material ("confirmed" carcinogen) based on positive evidence found in any of the following:

1. Humans
2. Two mammalian test species
3. One mammalian species, if the results are replicated in the same species in a separate study
4. A single mammalian species if the results are supported by multi-test evidence of mutagenicity

B. Category II Toxic Materials

A substance will be classified as a Category II Toxic Material ("suspect" carcinogen) if the evidence of carcinogenicity in humans or one or more mammalian species is found by OSHA to be only "suggestive" as opposed to confirming. Such a distinction would be based on generally accepted standards of review for such scientific studies.

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C. Category III Toxic Materials

A substance for which the evidence of carcinogenicity is found inadequate to classify as Category I or II will be classified as Category III.

V. Regulatory Actions

The proposal provides that at the time of or immediately following classification, regulatory action shall be initiated as follows:

A. Category I Toxic Material

1. Issue an Emergency Temporary Standard--a model standard is proposed for this purpose.
2. Issue a proposed permanent standard--a model permanent standard for a confirmed carcinogen is proposed for this purpose.
3. Simplify and reduce the time required for rulemaking by limiting the public hearing to certain specified issues, including feasibility.
4. Issue a final standard within six months.
5. Prohibit occupational exposure in specific applications where suitable substitutes are found which are less hazardous to workers.

B. Category II Toxic Material

1. Issue a proposed permanent standard--a model permanent standard for a "suspect" carcinogen is proposed.
2. Notify other federal agencies including NIOSH, EPA, and NCI of the determination that the evidence of carcinogenicity is only "suggestive" and request that those agencies consider such evidence in priorities for further research.
3. Complete the rulemaking proceeding and issue a final standard.

C. Category III Toxic Material

Advise other federal agencies including NIOSH, EPA, and NCI of classification and request any additional information which could have a bearing on reconsideration of the Category III classification.

Surprise Inspections For Safety Okayed

By Lyle Denniston

Washington Star Staff Writer

Government inspectors are free again to make surprise visits to businesses to check up on safety hazards for workers.

The only business in the country they may not visit is Barlow's Inc. in Pocatello, Idaho.

Supreme Court Justice William H. Rehnquist yesterday issued an order that lifted, for the next several months, a lower federal court's ban on surprise inspections by the Labor Department under the 1970 Occupational Safety and Health Act.

He expressly exempted Barlow's from any inspection because it won a challenge to the power of the Labor Department to send inspectors on unannounced visits to look for hazardous conditions on the job.

A special three-judge court in Boise on Dec. 30 ruled that inspectors violated Barlow's constitutional rights by a surprise visit without advance permission from a court. The three-judge court issued a nationwide ban on such inspections without court-issued warrants.

The Labor Department is planning to appeal that ruling to the Supreme Court. It asked Rehnquist to let the inspections go forward everywhere except at Barlow's because, otherwise, it would be "almost totally powerless" to require businesses to remedy safety hazards to workers.

On Jan. 25, Rehnquist issued a temporary order that allowed inspections to resume everywhere but in the state of Idaho.

Yesterday, he allowed inspections everywhere except Barlow's until after the Supreme Court has issued a final decision on the Labor Department's appeal.

The Washington Star

Friday, February 4, 1977

MCD 000009621

News

United States
Department
of Labor



OCCUPATIONAL SAFETY & HEALTH
ADMINISTRATION

USDL-- 77-33

CONTACT: James Foster
OFFICE: (202) 523-8151
AFTER HOURS: (703) 941-6798

FOR RELEASE: IMMEDIATE, WEDNESDAY
January 12, 1977

OSHA SEEKS SUPREME COURT RELIEF IN IDAHO CASE

The U.S. Department of Labor will seek relief in the Supreme Court from a U.S. District Court in Idaho ruling against inspections.

"We are profoundly disappointed at the decision of the district court not to grant our motion for a stay in this case," Dr. Morton Corn, assistant secretary of labor for the Occupational Safety and Health Administration (OSHA), said today.

"We will move now, as rapidly as possible, to seek a stay from the U.S. Supreme Court," Dr. Corn said. "The issues raised in this case are, as the district court said, constitutional in nature and can only be resolved by the Supreme Court."

The special three-judge panel of the district court handed down a decision on Dec. 30, which found that OSHA's inspection authority under the Occupational Safety and Health Act violates the Fourth Amendment. OSHA filed a motion to stay the court's accompanying injunction on Jan. 4. The decision to deny the stay was handed down yesterday.

"We have no choice but to honor the court's decision and will continue the suspension of all inspection activity in Idaho," Dr. Corn said. "The offices in Boise and Jackson will remain open for all other business, but no inspections will be conducted in Idaho. That includes inspections based on complaints, reports of imminent danger and reports of hospitalizations and fatalities due to industrial accidents."

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MCD 000009622

The incident which formed the basis for the case at issue falls into another category, general inspections, and activity in that area will also be suspended.

"While these legal processes are being carried out," Dr. Corn said, "we will continue to fulfill our responsibilities, under the law, throughout the rest of the nation. All inspection activities are being- and will be- carried out."

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MCD 000009623

News

United States
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Office of Information

Washington, D.C. 20210

OCCUPATIONAL SAFETY & HEALTH
ADMINISTRATION

USDL-- 77-80

Contact: James Foster
Office: 202-523-8151
After Hours: (703) 941-6798

FOR RELEASE: Immediate
Monday, Jan. 10, 1977

IDAHO OSHA OFFICES CEASE INSPECTION ACTIVITY

The Idaho offices of the U.S. Department of Labor's Occupational Safety and Health Administration (OSHA) in Boise and Lewiston have suspended all inspection activity until a U.S. district court rules on a motion to stay an injunction issued last Thursday. The injunction ordered OSHA to cease inspections because of the court's belief they did not comply with the Fourth Amendment.

"As a result of the court's order, we have no choice but to suspend all inspection activity in Idaho until the court acts on the motion to stay the injunction," Dr. Morton Corn, assistant secretary of labor for OSHA, said here.

The Lewiston and Boise offices remain open for all purposes other than actual inspections including review of inspection reports, responding to complaints on hazardous working conditions, and recording fatalities.

The government's motion to stay was filed with the court on Wednesday along with a notice of appeal to the Supreme Court. "If the district court grants us the stay, we will immediately resume inspections in Idaho," Dr. Corn said. "If the stay is not granted, we will immediately exercise our right to seek a stay from the Supreme Court."

OSHA's inspection activity is continuing as usual throughout the rest of the country.

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MCD 000009624

The court ruling involved an employer who refused to let an OSHA inspector enter his place of business.

The employer contended such an inspection would violate his rights under the Fourth Amendment to the Constitution to be protected from "unreasonable searches and seizures."

"The Act makes it clear that inspections are to be conducted at reasonable times and within reasonable limits and within a reasonable manner," Dr. Corn said. We believe our inspection procedures are eminently reasonable.

"We visit establishments which, based on industry average injury rates, can be expected to have significant numbers of hazards to employee safety and health. It is difficult to imagine any administrative system directed to preventive measures in approximately five million establishments which could anticipate, with any greater degree of accuracy, the hazards we might encounter in any given workplace."

The Boise office of OSHA is located at 1315 West Idaho St., P.O. Box 9207, 83707. The telephone number is (208) 384-1867. A field station is located in Lewiston, P.O. Box 1223, 83501, telephone number (208) 743-2589.

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MCD 000009625

**CHAPTER XVII—OCCUPATIONAL SAFETY
AND HEALTH ADMINISTRATION, DE-
PARTMENT OF LABOR**

[Docket No. S-102]

**PART 1910—OCCUPATIONAL SAFETY
AND HEALTH STANDARDS**

**PART 1926—SAFETY AND HEALTH
REGULATIONS FOR CONSTRUCTION**

Ground-Fault Protection

Correction

In FR Doc. 76-37472 appearing at page 55696 in the issue for Tuesday, December 21, 1976 the following corrections should be made:

(1) On page 55697, first column, eighteenth line from the top, after the word "economic" insert "impact".

(2) On page 55699, middle column, delete the eighth line from the bottom and insert: "would actually be idled, instead of 10."

FEDERAL REGISTER, VOL. 42, NO. 10—FRIDAY, JANUARY 14, 1977

MCD 000009626

News

United States
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of Labor



Office of Information

Washington, D.C. 20210

OCCUPATIONAL SAFETY & HEALTH
ADMINISTRATION

USDL-- 77-36

Contact: James Foster
Office : (202) 523-8151
After Hours: (703) 941-6798

FOR RELEASE: A.M. EDITIONS
FRIDAY, JAN. 14, 1977

JOB SAFETY DISCRIMINATION COMPLAINT SETTLED

The U.S. Department of Labor's Occupational Safety and Health Administration (OSHA) recently reached settlement with Missouri Valley, Inc., Amarillo, Texas in a job safety discrimination issue involving an alleged discharge of an employee who exercised rights under federal law.

The voluntary settlement resolved a discrimination complaint filed with OSHA by Mr. Richard L. Lyons, Glen Burnie, Md. Lyons alleged that he was discharged for contacting OSHA regarding safety hazards on the job, participating in the walkaround inspection, and being outspoken about safety on the job.

As part of the settlement agreement, the company paid Lyons backpay and posted a notice to employees outlining the terms of the settlement.

The complaint and settlement are related to a provision in the Occupational Safety and Health Act that employees engaged in safety or health related activities are protected against discrimination, discharge, or other adverse action by the employer arising out of the employee's protected activities.

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Editor's Note: For added details contact William Crumbaker, operations review officer Seattle (206) 422-5043.

MCD 000009627

current mandatory requirements concerning benzene.

Under the present standard, the permissible exposure limits to benzene are an eight-hour time-weighted average concentration of 10 ppm and a ceiling concentration of 25 ppm except for a maximum peak up to 50 ppm, or whatever limits are set by a state agency in a state with an approved safety and health plan.

If employee exposure is in excess of permissible limits, the employer must implement feasible engineering or administrative controls. Such controls must be implemented even if they do not completely reduce exposure to permissible limits. Only when all feasible controls have been implemented, and the level of benzene still exceeds permissible limits, may an employer rely on a respiratory protection program.

The National Institute for Occupational Safety and Health (NIOSH) announced in August 1976 that available evidence that benzene is leukemogenic is conclusive. NIOSH recommended, therefore, that for regulatory purposes benzene be considered carcinogenic in man.

Based on available evidence, NIOSH has recommended that the permissible exposure limit for benzene be lowered to a two-hour time-weighted average concentration of 1 ppm in air. OSHA currently is considering this recommendation.

For a single, free copy of the guidelines, write to B.K. Kwon, Room N3603, U.S. Department of Labor, 3rd St. and Constitution Ave., N.W., Washington, D.C. 20210.

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MCD 000009628

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Washington, D.C. 20210

OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION

Contact: James Foster
Office: (202) 523-8151
After Hours: (703) 941-6798

USDL-- 77-28

FOR RELEASE: Immediate
Monday, January 10, 1977

NATIONWIDE HEARINGS ON OSHA PRESIDENTIAL TASK FORCE SCHEDULED

Eleven public meetings allowing representatives of labor, management and the public to comment on recommendations of a Presidential task force have been scheduled for March by the U.S. Department of Labor's Occupational Safety and Health Administration (OSHA).

The meetings, scheduled for 11 cities across the country, will focus on the task force's suggested approach to revision of the standards on machinery and machine guarding, and on specific sections of the existing standard which should be changed.

The standards were among those national consensus and federal standards adopted by OSHA on May 29, 1971, five months after enactment of the Occupational Safety and Health Act of 1970.

On April 23, 1976, OSHA, recognizing the need to obtain data to use in revising all the adopted standards, published a notice in the Federal Register calling for comment on approximately 15 percent of its general industry safety standards: walking working surfaces, fire protection and anhydrous ammonia.

On May 7, 1976, President Ford established federal task forces to work with selected agencies to improve and simplify their regulations. OSHA was one of the agencies. The President's task force on revision of the OSHA Safety Regulations was responsible for developing both suggested revised standards for machinery and machine guarding, and a recommended new approach to OSHA safety standards.

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The task force approach was reviewed by the policy and standards subgroups of OSHA's National Advisory Committee on Occupational Safety and Health (NACOSH) on Oct. 7 and Nov. 4, 1976. The committee as a whole reviewed the approach on Nov. 18. NACOSH then recommended that OSHA publish the approach, with some modifications, as an advance notice of proposed rulemaking to collect information and comment.

Two notices are scheduled to be published in the Federal Register on Friday, Jan. 7, 1977. One raises specific technical issues concerning revision of the machinery and machine guarding standard. The other discusses general approaches to the problem of standards preparation and revision.

To solicit comments on the specific machinery and machine guarding approach, OSHA is using a three-column format. The first or left-hand column contains the language of the present standard. The second or middle column contains the most recent standard recommended by the American National Standard Institute (ANSI). ANSI, a private organization, developed many of the voluntary national consensus standards initially adopted by OSHA.

The third or right-hand column contains comments and raises issues relating to the particular provisions of the standard.

The general approach notice discusses ways of combining performance and specification standards to ensure worker safety. Design or specification standards dictate how a machine must be constructed and operated. A performance standard states employer obligations in terms of ultimate goals to be achieved.

The employer is then free to select the specific method to achieve those goals.

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MCD 000009629

OSHA is specifically seeking comments on whether employer obligations are sufficiently clear under this approach, and on whether employees will be readily able to determine if a safe workplace is being provided.

Written comments on the notices should be submitted on or before April 7, 1977, to be included with the record of the meetings. Requests to make oral presentations on substantive issues at the meetings should be submitted not later than two weeks prior to the meeting dates. Both written comments and requests to make presentations should be sent to Docket O, OSHA Technical Data Center, Room N3620, U.S. Department of Labor, 200 Constitution Ave., N.W., Washington, D.C. 20210.

The requests to make written presentations should identify the person or organization wishing to appear, the subject matter, the amount of time wanted and a brief summary of the presentation, if possible. Late requests may be honored, time permitting.

The meetings will be chaired by representatives of the Department of Labor designated by the Assistant Secretary of Labor for OSHA. The meetings will normally begin at 10 a.m. and conclude at 5 p.m. but provisions will be made for evening sessions, if sufficient requests are received.

The meeting dates and locations are:

March 1-3, 1977

Atlanta	Gulf Oil Bldg. Room 185 1375 Peachtree St., N.E.
East Boston	Logan Hilton Hotel Logan Airport

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Cleveland	Cleveland Holiday Inn 1111 Lakeside
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March 8-10, 1977

Chicago	Sheraton O'Hare (Rosemont) 6810 N. Mannheim Rd.
Dallas	Baker Hotel - The Texas Room 1400 Commerce St.
Denver	Stouffer's Denver Inn 3203 Quebec St.

March 15-17, 1977

Los Angeles	Biltmore Hotel- Roman Room 515 South Olive St.
Winston-Salem (N.C.)	Benton Convention Center Conference Room #5 301 West 5th St.

March 22-24, 1977

Seattle	Washington Plaza Hotel 5th & Westlake St.
Kansas City (Mo.)	Phillips House- The London Room 12th & Baltimore
New York	U.S. Department of Labor Room 3560 - 35th Floor 1515 Broadway

MCD 000009630

OSHA MACHINE GUARDING FACT SHEET

This fact sheet highlights general issues raised by the possible revision of the standards as well as a discussion of different approaches to standards revision. (Specific technical issues relative to the standards revision are contained in the Jan. 7, Federal Register.)

The April 23, 1976 Federal Register notice pointed out one of the major issues in the process is whether to use "performance" or "specifications" standards.

It is important to note that there are no commonly accepted definitions of "performance" or "specification" standards. Rather there is a spectrum of requirements ranging from the general duty requirement-- to maintain workplaces free from recognized hazards-- to the most specific-- rivets should be five inches apart, railings must be exactly 42 inches high, etc.

As a general proposition, a specification standard can be said to show how a task should be accomplished. On the other hand, a performance standard states obligations in terms of ultimate goals which must be achieved. The employer remains free to select the specific method to achieve the goals.

A large number of employers appear to favor the adoption of a performance approach. Those employers argue that the specification type of standard is unduly rigid, inhibits the development and use of new technology, and is often so complicated that many employers and employees cannot determine what is required.

On the other hand, a number of employers have expressed concern that under a performance standard they would lack sufficient guidance to know exactly what they must do to comply with the regulations.

Similarly some employees have suggested that performance standards may not adequately inform them of what obligations are imposed on their companies.

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The question has also arisen about the degree to which a performance approach could impose information greater burdens on OSHA compliance officers.

The task force approach embodies a performance standard, but also provides detailed information in two separate appendices to the regulation to help employers and employees understand how safeguards can be put in place. The regulation lists hazards and specifies safeguarding methods, one of which must be used by an employer to protect employees' against the hazards. The employer could carry out his obligations in either of two ways: (1) determine if a hazard exists and if an employee is exposed. If an employee is exposed to hazard, the employer must use an acceptable safeguarding method. Appendix A provides guidance on how to use an acceptable method. (2) the employer can follow all the relevant specifications listed in Appendix B.

Appendix A would provide guidance to an employer who opted for a performance approach. He would determine what protection was best suited for his employees based on a simplified explanation of the basic principles of machine guarding contained in Appendix A. Illustrations of various types of safeguarding devices are contained in the appendix for his use. In addition, the appendix would identify 22 American National Standards Institute (ANSI) standards relevant to machine guarding which have not been reviewed or approved by OSHA.

If an employer preferred a more detailed approach to fulfilling his obligation to protect employees, he could follow all the specifications laid out in Appendix B.

When making an inspection a compliance officer would assess each machine to determine if an employee is exposed to an enumerated hazard. If an employee was so exposed and an acceptable method of safeguarding was not used or the speci-

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cations provisions of Appendix B were not followed, then the employer could be found in violation of the regulation.

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MCD 000009632

DEPARTMENT OF LABOR

Occupational Safety and Health
Administration

[29 CFR Part 1910]

[Docket No. H-104]

AMORPHOUS SILICA

Advance Notice of Proposed Rulemaking

The Occupational Safety and Health Administration, U.S. Department of Labor is studying the general health implications, safe exposure levels, and methods of sampling and measurement for amorphous silica. It is considering preparing a new proposed standard which will be complete and will better protect employees exposed to amorphous silica in the diatomaceous earth processing industry, refractory brick industry, wine and liquor production industry, and other industries which use amorphous silica or diatomaceous earth for cleaning, polishing, filtering, calcining or other processes. There is now no complete standard for amorphous silica but an exposure limit is set by Table Z-3 of 29 CFR 1910.1000 (formerly Table G-3 of 29 CFR 1910.93).

This advance notice of proposed rulemaking is being published to permit interested persons to submit information useful in the preparation of a proposed standard and suggested requirements to be included within it. Interested persons will also be entitled to participate in the rulemaking process after the publication of any proposed standard on amorphous silica through written comments and participation at a hearing if requested.

Accordingly, interested persons are invited to submit by March 1, 1977, written data, views and comments concerning a standard on amorphous silica for employees to the Docket Officer, Docket No. H-104, Occupational Safety and Health Administration, U.S. Department of Labor, Room N-3620, 200 Constitution Ave., NW, Washington, D.C. 20210 (Telephone (202) 523-8076). Comments are specifically requested concerning:

- (1) Health effects of amorphous silica;
- (2) Data useful for setting a safe exposure level and also data of current exposure levels;
- (3) The use of respirable mass of dust as a measure of risk;
- (4) Workplaces, processes, occupations or jobs where exposures to amorphous silica can occur;
- (5) Appropriate engineering controls, work practices and personal protective equipment to reduce levels of exposure;
- (6) Appropriate provisions for employee exposure monitoring, methods of compliance, signs and labels, medical surveillance, training and recordkeeping;
- (7) The application of recordkeeping and similar requirements to small busi-

nesses and those with highly transient work forces;

(8) The feasibility of complying with a complete amorphous silica standard at the current or a reduced level of exposure;

(9) The environmental, economic and inflationary impact of a complete amorphous silica standard at the current or a reduced level of exposure; and

(10) Any other information pertinent in preparing an amorphous silica standard.

(Secs. 4(b), 6(b) and 8 of the Occupational Safety and Health Act of 1970 (84 Stat. 1592, 1593, 1599; 29 U.S.C. 653(b), 655(b), 657) and Secretary of Labor's Order No. 8-76 (41 FR 25059, June 22, 1976).)

Signed at Washington, D.C. this 17th day of December 1976.

MORTON CORN,

Assistant Secretary of Labor.

[FR Doc 76-37870 Filed 8-27 76 8 45 am]

MCD 000009633

News

United States
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Office of Information

Washington, D.C. 20210

OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION

Contact: James Foster
Office : (202) 523-8151
After Hours: (703) 941-6798

USDL-- 76-1545

FOR RELEASE: Immediate
Monday, Jan. 3, 1977

OSHA SETS MARCH 15 HEARING FOR PROPOSED LEAD STANDARD

A public hearing concerning a proposed job health standard that would reduce worker exposure to lead has been scheduled to begin March 15, 1977, in Washington, D.C., according to a notice of the U.S. Labor Department's Occupational Safety and Health Administration (OSHA), scheduled to be published in the Federal Register today.

The key provision of the proposed standard would change the present OSHA permissible exposure limit from 200 to 100 micrograms of lead per cubic meter of air, based on an eight-hour time-weighted average.

OSHA officials noted that the final standard on employee exposure to lead will be based on the total public record developed during the rulemaking process. That record will include all written and oral data, views and arguments concerning all issues raised in the rule-making. Thus, OSHA expressed hopes for widest possible participation by interested parties.

Since the proposal first appeared in the Federal Register Oct. 3, 1975, additional issues have been raised concerning chelating agents (chemical purgatives administered to remove metals from the body), the adequacy of blood level determinations, and effects of lead on human reproductive functions.

To permit further comment on these new issues, issues raised

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MCD 000009634

earlier, and any other related issues, OSHA has extended to February 11, the deadline for written comment. The written comment period originally ended Dec. 2, 1975, but was later extended to Jan. 16, 1976.

In addition, a preliminary "Technological Feasibility, Cost of Compliance and Inflationary Impact Study" on the proposal has been prepared for OSHA. It is now available for public inspection and copying at OSHA's Technical Data Center, U.S. Department of Labor, Room N3620, 3rd St. and Constitution Ave., N.W., Washington, D.C. 20210. A final study, that will consider ongoing data collection efforts, will be made available for further study at least four weeks prior to the March 15 public hearing.

Since publication of the proposed standard, OSHA also has received copies of additional studies and reports, most of which have been published recently and which concern various health problems arising from lead exposure. Because the studies may be discussed at the public hearing, a complete listing is scheduled to appear in today's Federal Register notice.

Interested persons are invited to submit written data, views and arguments with respect to the proposal, the preliminary technological and cost study, the additional scientific studies, the additional issues raised, and any other relevant issues postmarked by Feb. 11, to: Docket Officer, Docket No. H-004, Room N3620 OSHA, U.S. Department of Labor, 3rd St., and Constitution Ave., N.W., Washington, D.C. 20210. An additional Federal Register notice will be published later offering an opportunity for public response to the final technological

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and Cost study.

Requests to appear at the March 15 public hearing to begin at 9:30 a.m. in the Departmental Auditorium, Constitution Ave. between 12th and 14th Sts., N.W., should be postmarked by Feb. 11, and sent to the OSHA Committee Management Office, Room N3633, at the U.S. Department of Labor.

Requests must contain names and addresses of persons requesting to appear, the capacity in which they will appear, the estimated time needed, specific provisions of the proposal that will be addressed, a detailed statement of the position to be taken on each issue to be addressed together with a statement of the evidence to be produced in support of that position.

MCD 000009635

DEPARTMENT OF LABOR

Occupational Safety and Health
Administration

[29 CFR Part 1910]

[Docket No. H-004]

PROPOSED STANDARD FOR EXPOSURE
TO LEAD

Informal Public Hearing; Availability of
Preliminary Technological Feasibility
and Inflationary Impact Study; and Re-
ceipt of Additional Studies

• **Purpose.** The purposes of this notice are to schedule a hearing date for receipt of oral testimony on all relevant issues concerning the lead proposal; to explicitly raise certain additional issues; to set forth a list of additional studies concerning exposure to lead; to announce the availability of a preliminary technological feasibility, cost of compliance and inflationary impact study of the proposed lead standard; and to permit further comment on the proposal.

Background. On October 3, 1975, notice of a proposed standard for occupational exposure to lead was published by the Occupational Safety and Health Administration (OSHA) in the *Federal Register* (40 FR 45934) pursuant to the authority in sections 6(b) and 8(c) of the Occupational Safety and Health Act of 1970 (84 Stat. 1593, 1599; 29 U.S.C. 655, 657) and Title 29, Code of Federal Regulations (CFR) Part 1911.

Interested persons were given until December 2, 1975 to submit written data, views and arguments on the proposal and to file objections and request a hearing thereon. At the request of several commenting parties, this period was subsequently extended until January 15, 1976 (40 FR 55845). Over 100 written comments have been received including approximately 40 requests that a public rulemaking hearing be held.

Issues. The preamble to the proposed standard listed 10 major issues as likely to be of significance in the rulemaking proceeding (40 FR 45934). They are as follows:

1. Whether the proposed permissible exposure limit to lead should be 100 ug/m³; and whether this level incorporates an appropriate margin of safety;
2. Whether subclinical effects of exposure should be considered in establishing a standard for occupational exposure to any substance, in this case lead;
3. Whether compliance with the proposal is technologically and economically feasible;
4. Whether, as provided in the proposal, employers in certain specific industries should be required to conduct initial monitoring of the exposures of some employees or whether initial determinations without monitoring are sufficient for all industries;
5. Whether biological sampling and analysis should be required as a supple-

ment to air monitoring to determine employee absorption of lead;

6. Whether the provisions for methods of compliance, medical surveillance, protective equipment and clothing, hygiene facilities, and recordkeeping are appropriate;

7. Whether warning signs and labels should be required;

8. To what extent are there groups with increased susceptibility to lead in the working population, such as women of childbearing age; and should such increased susceptibility, if it exists, be considered in establishing a standard for occupational exposure to any substance, in this case lead; and

9. What are the environmental and inflationary impacts of this proposal.

10. Whether compliance with the proposal would be technologically and economically feasible for all affected industries, and particularly for employers engaging small numbers of employees.

Comments and information were sought on these and any other issues raised by the proposal.

Since publication of the proposal, issues not specifically covered by the 10 listed above or discussed at any length in the preamble have been raised. OSHA considers these new issues to be of such importance and controversy that comments, information and data are now sought on them, both in writing and at the rulemaking hearing. Therefore, to promote the fullest possible analysis of these issues during the rulemaking proceeding, they are briefly discussed below.

Chelating Agents. Essentially, chelates are chemical purgatives administered to remove metals from the body. They are often administered in emergency situations to remove lead from children who have ingested large amounts and are exhibiting symptoms of acute lead poisoning. Chelates, such as calcium disodium ethylenediamine tetraacetate (EDTA, Versenate), are highly toxic and place a strain on certain organs, such as the kidney, when used repeatedly. Furthermore, once administered, they remove not only lead but may remove most other metals from the system as well.

OSHA recognized the possibly inappropriate use of chelates to reduce employee blood levels in the proposed standard when it recommended that: "Chelating agents shall not be routinely administered to employees, and shall not be administered at all except by, and at the discretion of, a licensed physician." (40 FR 45945) In a written comment submitted on the proposal, it was suggested that OSHA prohibit the administration of all oral chelating agents and limit the administration of intravenous chelating agents to emergency situations only (comment #112, p. 2). In February 1976, a study performed by the Mt. Sinai School of Medicine's Environmental Sciences Laboratory in New York revealed routine chelation therapy at two Indianapolis, Indiana secondary lead smelters. In March, hearings were held by the Subcommittee on Manpower, Compensation and Health and Safety of the full Committee on Education and La-

bor of the U.S. House of Representatives to investigate occupational exposure to lead and use of chelating agents. The Director of the National Institute for Occupational Safety and Health, Dr. John Finklea, testified at the hearing that: "They (chelating agents) should only be administered under proper medical supervision and not by anyone untrained in medicine. . . . Physicians should not chelate workers and send them back to work where there is a likelihood that they would have continued overexposure to lead." Anemia and evidence of neurological damage have been found in workers treated in this manner. Dr. Hector Blejer, appearing on his own behalf, testified concerning his observations of the use of chelating agents during his service with the State of California. He noted that some experts recommend that chelates or any other chelation therapy should not be administered at all to treat overexposed adult workers. Instead, they recommend immediate removal of the employee from exposure and treatment of the symptoms of intoxication. This is referred to as natural "deleading."

In July 1976, the Food and Drug Administration warned against the "prophylactic" use of chelation in its June-July Drug Bulletin, adding that "their chronic use to combat continued exposure to lead has not been shown to be effective and can harm the subject." "Prophylactic" chelation has been discussed in the literature to include the routine use of chelation or similarly acting drugs to prevent elevated blood lead levels in workers who are occupationally exposed to lead or the use of these drugs to lower blood lead levels to predesignated concentrations.

The issue of chelation thus concerns its proper use in an occupational setting to the extent that an employer is involved with its administration. More specifically, under what circumstances, if any, should chelation therapy be relied on to treat employees exhibiting symptoms of acute lead intoxication? Would compliance with the proposal's requirement concerning it be adequately protective of worker health? What are the long-term and short-term health effects of chelation?

Adequacy of Blood Lead Determinations. Blood lead level determinations are the primary biological monitoring technique required in the proposal's medical surveillance provisions. The preamble to the proposal acknowledged that this method provides the most useful and relatively accurate method of arriving at an employee's current lead absorption. The preamble also stated that, of the various biological monitoring tests available, determinations of blood lead levels correlated best with the appearance of symptoms of lead intoxication and with concentrations of airborne lead. There are, however, some significant limitations inherent in blood lead level determinations. For example, a blood lead level reflects the amount of active or mobile lead in the body at a particular time which may be as little as 10 percent of

the total body burden. Also, blood lead determinations are susceptible to depression from a variety of sources other than reduced lead absorption, such as iron, anemia or chelation treatment. In addition, a procedure frequently employed by laboratories that perform blood lead determinations is to also assess hematocrit or hemoglobin levels in order to more accurately indicate the amount of lead present in the body.

Recently, biological monitoring methods other than blood lead determinations have received increased attention. The 1976 Mt. Sinai study of workers in 2 lead smelters in Indiana revealed that, of the laboratory findings studied including blood lead levels, determinations of zinc protoporphyrin (ZPP), an indicator of hemo-synthesis, correlated well with the clinical symptoms observed. Other recent studies suggest that both during and after long-term stable lead exposures measurement of erythrocyte protoporphyrin (EP), a similar indicator to ZPP, gives a better reflection of hematologically active lead than other available parameters. It should be noted that EP determinations are already being employed in conjunction with blood lead determinations in screening tests for lead toxication in children. The studies have also found a positive correlation at blood lead levels below 70ug/100ml between EP and subjective symptoms related to lead toxicity. These and other studies were discussed by the Subcommittee on Permissible Limits of the Permanent Commission and International Association on Occupational Health which met in Amsterdam, The Netherlands, in September 1976. The Subcommittee's published report on occupational exposure to lead, including a discussion of ZPP determinations, is still pending. ZPP determinations may offer substantial promise as a practical, sensitive and economic monitoring test suitable for routine use. One manufacturer indicated in its comment on the proposed standard that a portable hematofluorometer, now commercially available, permits the determination of the ZPP level in a drop of unprocessed blood deposited on a disposable glass slide (comment #79, addendum).

In light of these recent studies, OSHA seeks comments on the potential utility of ZPP determinations as an alternative method to be used in the initial screening for lead intoxication. Are the equipment and technique necessary for this determination reliable, available and relatively inexpensive? Should blood lead determinations be supplemented with assessments of hematocrit and hemoglobin levels?

Effects of Lead on Reproductive Functions. For years, lead has been known to affect reproductive functions. Observations among human populations indicate that lead is associated with sterility, spontaneous abortions, stillbirths, birth defects, increased infant mortality, increased prematurity and increase in chromosomal abnormalities. Additionally, animal test systems have indicated that lead may be associated with infertility and mutagenesis. However,

- National Institute for Occupational Safety and Health: Health Hazard Evaluation Determinations. Reports No. 73-27-200 (June 1975), 73-158-182 (November 1974), and 73-164-169 (January 1975).
- Needleman P.: Lead Poisoning in Children: Neurologic Implications of Widespread Subclinical Intoxication. *Seminars in Psychiatry* Vol. 5 No. 1, (February 1973).
- Paschen P.: Operation of Lead Blast Furnaces: Summary and Critical Evaluation of the Literature of 1971. *AIIME World Symposium on Mining and Metallurgy of Lead and Zinc in St. Louis*. (German) *Metall* 26:195-99, (1973).
- Recirculation of Exhaust Air, U.S. Department of Health, Education and Welfare, NIOSH (76-186).
- Recommended Industrial Ventilation Guidelines, U.S. Department of Health, Education and Welfare, NIOSH (76-162).
- Reinert M.: Lead Quality from a Technical and Application Engineering Standpoint. (German) *Metall* 28:135-142, (February 1974).
- Report of Overnight Hearings on the Occupational Safety and Health Act—Occupational Health Hazards, before the Subcommittee on Manpower, Compensation and Health and Safety of the Committee on Education and Labor, U.S. House of Representatives (March 13, 22, 24, 25, 1976).
- Roels H.; R. Lauwerys; J. Buchet; and M. Vreust: Responses of PEP and ALAU in Men and Women Moderately Exposed to Lead. *Int Arch Arbeitsmed* 34:97, (1975).
- Ruhf R.: Lead Exposure Control in the Production of Lead Steel. *AIHJ* 24:63-67, (1963).
- Scanlon J.: Human Fetal Hazards from Environmental Pollution with Certain Non-Essential Trace Elements. *Clinical Pediatrics*, (March 1972).
- Schlesinger W.: Experimental Lead Neuropathy: A Disease of the Supporting Cells in the Peripheral Nervous System. *J Neuropathol Exper Neurol* 28:189-194, (1971).
- Second International Workshop on Occupational Lead Exposure, Reevaluation of Permissible Limits on Lead Exposure, Permanent Commission and International Association on Occupational Health. (September 21-23, 1976). Papers Presented:
- Aleasio L.: Free Erythrocyte Protoporphyrin as an Indicator of the Biological Effect of Lead in Adult Males.
- Beritic T.; D. Pryle-Majic; and S. Telleman: ALAD/PEP Ratio as a Measure of the Degree and Duration of the Action of Lead.
- Berlin A.; K. E. Schaller; H. Grimes; M. Langewitz; and J. Trotter: Environmental Exposure to Lead: Analytical and Epidemiological Investigations Using the European Standardized Method for Blood Delta-Aminolevulinic Acid Dehydratase Activity Determination.
- Stiljans J.; H. deFrance: Cytogenic Investigations in Volunteers Ingesting Inorganic Lead.
- Dernik A.; A. Smith: Factors Influencing the Evaluation of Blood Lead Levels and Proposals for Improving the Reliability of Results.
- Cools A.; H. Sallie; M. Verberk; and R. Zielhuis: Biochemical Responses of Male Volunteers Ingesting Inorganic Lead for 46 Days.
- Crookford G.; E. Mitran: Progress Report, A Study of Human Performance in Relation to Lead Exposure.
- deBruin A.: Early Biochemical/Biological Effects of Lead (Laboratory Diagnosis of Increased Lead Absorption); Human Experience.
- Fischbein A.; J. Eisinger; W. Blumberg; R. Lills; and I. Selikoff: Fluorometric Zinc Protoporphyrin Determination in Blood-A Fractional Method for the Detection of Chronic Lead Poisoning.
- Fornal A.: Chromosomal Effects of Lead; A Review.
- Herber R.; H. Sallie: The Analytical Prediction of Lead in Blood Compared to 6-Aminolevulinic Acid Dehydratase Activity. *ILZRO 207. International Lead-Zinc Research Organization—Study of Solubility and Particle Size Distribution of Industrial Airborne Lead*.
- Lauwerys R.: Early Biochemical and Biological Effects of Lead in Man; A Review.
- Lills R.; W. Blumberg; J. Eisinger; A. Fischbein; S. Diamond; H. Anderson; and I. Selikoff: Lead Effects Among Secondary Lead Smelters with Blood Lead Levels Below 80 ug/100ml.
- Nordberg G.: Dose-Effect and Dose-Response Relationships for Lead—Conclusions Reached at an International Meeting in Tokyo, November 1974.
- Popovic D.: Effect of Low Doses of Inorganic Lead on Some Biological Parameters: "Response of ALA-D Activity and PEP in Blood, the Urinary ALA and CP Levels in Workers Chronically Exposed to Lead."
- Repko J.: Behavioral Methods and Results in the Evaluation of Workers Occupationally Exposed to Inorganic Lead in U.S. Battery Manufacturing Industries.
- Schleier R.; K. Schaller: Studies About the "Lead-Specificity" of the Erythrocyte, Delta-Aminolevulinic Acid Dehydratase (ALA-D).
- Seppäläinen A.; H. Hanninen; and S. Hernberg: Effect of Lead on the Central and Peripheral Nervous System.
- Verberk M.: Motor Nerve Conduction Velocity in Volunteers Ingesting Inorganic Lead for 46 Days.
- Wibowo A.; F. del Castillo; R. Herber; M. Verberk; H. Sallie; and R. Zielhuis: Interaction Between Lead and Iron Metabolism, a Probable Cause of Female Susceptibility to Inorganic Lead.
- Williams M.: Permissible Limits for Occupational Exposure to Inorganic Lead and the Blood Lead-Air Lead Relationship.
- Zielhuis R.; A. Wibowo: Review Paper: Susceptibility of Adult Females to Lead: Effects on Reproductive Function in Females and Males.
- Selander S.; K. Cramer: Interrelationships Between Lead in Blood, Lead in Urine and ALA in Urine During Lead Work. *Brit J Ind Med* 27:28-39, (1970).
- Selander S.; K. Cramer; and L. Hallgruth: Studies in Lead Poisoning. *Brit J Ind Med* 28:282-291, (1966).
- Seppäläinen, A.M.: Peripheral Nervous System in Lead Exposed Workers. *HEW Publication* 74-128, pp 240-247, (1975).
- Sessa T.; G. Sanna: Nerve Conduction in Occupational Diseases. *Folia Medica* 46:609-615, (1966).
- Stankovic M.: Biochemical Tests for the Appraisal of Exposure to Lead. *Arch Environ Health* 23:255-260, (1971).
- Strand L.; J. Manning; and E. Marver: The Induction of Delta-Aminolevulinic Acid Synthetase in Cultured Liver Cells. *J Biol Chem* 247:2820-2827, (1972).
- Stuk E.J.: Biological Responses of Male and Female Volunteers to Inorganic Lead. *Int Arch Arbeitsmed* 33:83-97, (1974).
- Sukata Y.; M. Aoki; and T. Yamamoto: Changes in Hepatic Delta-Aminolevulinic Acid in Lead Intoxicated Rats. *J Toxicol Environ Health* 127:33, (1975).
- Thompson J.: Balance between Intake and Output of Lead in Normal Individuals. *Brit J Ind Med* 28:189-194, (1971).
- Tola S.: The Effect of Blood Lead Concentration, Age, Sex and Time of Exposure Upon Erythrocyte ALA-D Activity. *Work Environ Health* 10:26-35, (1973).
- Urbanowicz H.: Occupational Exposure to Inorganic Compounds of Lead. *Arch Environ Health* 23:294-298, (1971).
- Waldron H.: Correlation Between Some Parameters of Lead Absorption and Lead Intoxication. *Brit J Ind Med* 28:195-199, (1971).
- Wedeen R.P.; J.K. MacSaka; B. Weiner; Lepat; M.M. Lyons; L.F. Vitale; and J. Jossow: Occupational Lead Nephropathy. *Amer J Med* 59:830-841, (1975).
- Zielhuis R.: Biological Quality Guide for Inorganic Lead. *Int Arch Arbeitsmed* 32:103, (1974).
- Zielhuis R.: Dose-Response Relationships for Inorganic Lead; I. Biochemical and Hematological Responses. *Int Arch Occup Hyg* 35:1-18, (1975).
- Zielhuis R.: Dose-Response Relationships for Inorganic Lead; II. Subjective and Functional Response Levels. *Int Arch Occup Hyg* 35:19-35, (1975).

Preliminary Study of Technological Feasibility, Cost of Compliance and Inflationary Impact:

John Short and Associates, Inc., has prepared for OSHA a preliminary study entitled "Technological Feasibility, Cost of Compliance and Inflationary Impact Study of the Proposed OSHA Standard for Lead." The study includes assessment of the technological feasibility of compliance, an initial estimate of compliance costs and the potential economic implications for those industries affected by the proposed standard. The effects on other variables, such as employment, prices, productivity, market structure, exports and imports, and the consumption of energy and critical materials, are also considered.

Notice is being given of the availability of this preliminary study to afford interested parties the earliest possible opportunity to contribute comment, information and data. The final study, which will be made available at least 4 weeks prior to the public hearing, will be based on the results of an ongoing supplemental data collection effort by D. B. Associates of Salt Lake City, Utah, on behalf of OSHA. The final study will include a discussion of the anticipated benefits to be derived from implementation of the proposal, and a more in-depth evaluation of the various economic impacts. Evaluation of the economic and technological feasibility of the final standard will be based on the entire record of the rulemaking proceeding, including all oral and written comments made part of the record, as well as the final study.

Interested parties are invited to submit information, comments and data on the issue of economic feasibility of the proposal or on any other issue discussed in the preliminary study, including:

- (1) Cost impact on consumers, businesses, markets, or Federal, State or local government;
- (2) Effect on productivity of wage earners, businesses (both small and large) or government;
- (3) Effect on competition;
- (4) Effect on imports and exports;
- (5) Effect on supplies of important materials, products or services;
- (6) Effect on employment;
- (7) Ability of specific industries to absorb costs of compliance; and
- (8) Effect on energy supply or demand.

The preliminary study of the proposed lead standard is now available for public inspection and copying at the following address: Technical Data Center, Occupational Safety and Health Administration, U.S. Department of Labor, Room N-3620, Third and Constitution Avenue, N.W., Washington, D.C. 20210. (Telephone: 202-523-8076)

Public Participation. Interested persons are invited to submit written data, views and arguments with respect to the proposal, the preliminary study, the additional scientific studies, the three issues discussed in this notice, and any other relevant issues. Such comments must be postmarked on or before February 11, 1977. All written comments must be submitted in quadruplicate to the Docket Office, Docket No. H-004, Room N-3620, U.S. Department of Labor, 3rd and Constitution Avenue, N.W., Washington, D.C. 20210. Written submissions must clearly identify the portion of the proposal and the preliminary study addressed and the position taken with respect to each issue therein. The data, views, and arguments that are submitted, as well as copies of the new studies listed earlier, will be available for public inspection and copying at the above address. All timely written submissions received shall be made a part of the record of this proceeding.

In response to a number of requests from commenting parties, and pursuant to section 6(b)(3) of the Act, an opportunity to submit oral testimony concerning the issues raised by the proposed standard, including its economic and environmental impacts will be provided at an informal public hearing scheduled to begin at 9:30 a.m. on March 15, 1977, in the Departmental Auditorium, Constitution Avenue between 12th and 14th Streets, N.W., Washington, D.C. 20210.

Persons desiring to participate at the hearing, including those who previously requested that a public hearing be held, must file a notice of intention to appear, postmarked on or before February 11, 1977 with the OSHA Committee Management Office, Docket No. H-004, Room N-3620, U.S. Department of Labor, 200 Constitution Avenue, N.W., Washington, D.C. 20210 (Telephone: 202-523-8024). Except under extraordinary circumstances, a party which does not submit a proper notice of intention to appear in timely fashion will not be permitted to testify at the hearing.

The notices of intention to appear, which will be available for inspection and copying at the OSHA Committee Management Office, must contain the following information:

- (1) The name, address, and telephone number of each person to appear;
- (2) The capacity in which the person will appear;
- (3) The approximate amount of time required for the presentation;
- (4) The specific issues that will be addressed;
- (5) A detailed statement of the position that will be taken with respect to each issue addressed; and

(6) A detailed statement of the evidence with respect to each such issue proposed to be adduced at the hearing.

OSHA has determined that strict enforcement of its procedural rules contained in 29 CFR 1911.11 is necessary for an expeditious and orderly proceeding. Therefore, the notices of intention to appear will be scrutinized closely for sufficiently detailed information concerning the position to be taken with regard to the issues specified and the evidence to be adduced in support of the position.

Persons filing notices of intention to appear which are not sufficiently detailed will be so informed and given seven (7) days from the date they are informed to file a proper notice of intention to appear. In addition, the amount of time requested for each presentation will be reviewed in light of the contents of the notice of intention to appear. In those cases where the information contained in the notice of intention to appear does not seem to warrant the amount of time requested, the participant will be allocated a more appropriate amount of time and notified of that fact. The participant will have seven (7) days from the date on which he is so informed to demonstrate why the allocated time is inappropriate.

In addition to submitting appropriate and timely notices of intention to appear, those persons intending to submit a prepared written statement or documents for the record at the hearing must submit such documents in quadruplicate by March 11, 1977. These documents must be received by Clarence Page in the OSHA Committee Management Office, by the close of business March 11, 1977.

The hearing will commence at 9:30 a.m. on March 15, 1977, with the resolution of any procedural matters relating to the proceeding. The hearing will be conducted and decisions made in accordance with 29 CFR Part 1911.

The Administrative Law Judge presiding at the hearing shall have all the powers necessary or appropriate to conduct a full and fair informal hearing, including the powers:

- (1) to regulate the course of the proceedings;
- (2) to dispose of procedural requests, objections, and comparable matters;
- (3) to confine the presentations to matters pertinent to the proposed standard;
- (4) to regulate the conduct of those present at the hearing by appropriate means;
- (5) in the judge's discretion, to question and permit questioning of any witness; and
- (6) in the judge's discretion, to keep the record open for a reasonable, stated time to receive written information and additional data, views and arguments from any person who has participated in the oral proceedings.

Following the close of the hearing, the presiding Administrative Law Judge shall certify the record thereof to the Assistant Secretary of Labor for Occupational Safety and Health.

The proposal will be reviewed in light of all oral and written submissions received as part of the record, and a final standard will be issued based on the entire record in this proceeding.

Important Dates

Hearings: Mar. 15, 1977.
Last day for submitting statements and evidence for hearing: Mar. 11, 1977.
Last day for filing Notices of Appearance: Feb. 11, 1977.
Close of Comment Period: Feb. 11, 1977.
(Sec. 6, Pub. L. 91-596, 84 Stat. 1593 (29 U.S.C. 656); 29 CFR Part 1911; Secretary of Labor's Order No. 8-76 (41 FR 25068).)

Signed at Washington, D.C., this 27th day of December 1976.

MORTON COLE,
Assistant Secretary of Labor
[FR Doc. 77-122 Filed 1-3-77; 8:45 am]

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Note: In the interest of brevity, the Williams Steiger Occupational Safety and Health Act of 1970 may be referred to as the "Job Safety and Health Act" or as "The Act". The Occupational Safety and Health Administration may be referred to as "OSHA".

TECHNICAL NOTES #68 December 28, 1976

IN THIS ISSUE:

1. OSHA GRANTS VARIANCE ON GUARDRAIL REQUIREMENT
2. OSHA APPROVES SUPPLEMENTS TO VERMONT PLAN
1. OSHA GRANTS VARIANCES ON GUARDRAIL REQUIREMENT

In three separate actions, OSHA has granted Metalplate and Coating, Inc., Atlanta; Joslyn Manufacturing and Supply Co., Chicago; and Smith Industries, Inc., Houston, variance from the general requirements for protective guardrails and toeboards around galvanizing tanks.

The permanent variance approvals are effective December 28, the scheduled date of publication in the Federal Register.

The companies initially petitioned separately for an interim order allowing variance. The interim order of Metalplate and Coatings, Inc., was granted and published in the Federal Register September 27, 1974; Joslyn Manufacturing's on July 23, 1976; Smith Industries' December 23, 1975. Those notices invited interested persons, including affected employers, to submit comments. No comments or requests for a public hearing were received.

All three companies have galvanizing tanks on which the standard requirement of a 42-inch guardrail would seriously interfere with necessary work practices such as skimming zinc. In each instance, the company has installed guardrails shorter than the required height but of sufficient height to allow an employee to right himself if he should fall toward the tank. In addition, ledges around the guardrails prevent an employee from accidentally stepping into the tank.

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These devices will be used in combination with the employer's assurance that no employee will be allowed to walk, step, or sit on the ledge around the tank. Additionally, each company will provide employee training sessions on the hazards of working around the tanks. The combined safety measures provide as much protection as the standard guardrail and toeboard.

2. OSHA APPROVES SUPPLEMENTS TO VERMONT PLAN

The Labor Department's Occupational Safety and Health Administration (OSHA) has approved supplements to Vermont's state plan for occupational safety and health. Notice of approval, which reflects the completion of several developmental steps, is scheduled to appear in the January 4, 1977, Federal Register.

Under the Occupational Safety and Health Act of 1970, states may submit for OSHA's approval plans for their own job safety and health program. Such plans may be approved if they are "at least as effective as" OSHA's federal job safety and health programs. Vermont's plan was approved as developmental in 1973. As the states develop their plans supplements also must be submitted for approval under the same basic criterion.

In addition to some minor clerical corrections, the Vermont supplements concern establishment of the following: a Standards Advisory Council, a health and safety enforcement program, an Occupational Safety and Health Review Board, recordkeeping and reporting requirements, and procedures for coordination between Vermont's Division of Occupational Safety and Division of Occupational Health.

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The supplements, along with the approved state plan may be inspected and copied at the following locations: Office of the Director, Federal Compliance and State Programs, Room N3608, 3rd St. and Constitution Ave., N.W., Washington, D.C. 20210; Technical Data Center, Room N3620, 3rd St. and Constitution Ave., N.W., Washington, D.C. 20210; Office of the Regional Administrator, Occupational Safety and Health Administration, Room 1804, John F. Kennedy Building, Boston, Massachusetts 02202; Department of Labor and Industry, State Office Building, Montpelier, Vermont 0562.

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COMMUNITY NOISE REGULATIONS
EFFECT ON THE PETROLEUM INDUSTRY

Background on Community Noise Ordinance in the U. S.

According to the December 1975 issue of Sound and Vibration magazine, at the end of 1975, there were approximately 550 separate community noise ordinances in effect throughout the United States. Many of these have been enacted for some time and contain only general nuisance provisions. They normally have not been a problem or a hardship for industry due to lax enforcement.

However, in the past year or so the tendency has been to enact legislation providing ordinances with quantitative noise emission limits. These, coupled with OSHA's workplace noise limits, are starting to impose restrictions on the amount of noise industry can emit and are providing regulators with the tools to both determine violations and take action against the violators.

The ordinances enacted to date have generally been locally inspired to fulfill a local community need and, therefore, there has been little uniformity. However, in September, 1975, the Federal EPA published a "Model Community Noise Control Ordinance" for use by cities and counties in developing their local ordinances. There are indications the EPA intends to actively encourage communities to enact ordinances modeled after theirs where none are present and to change over to this performance standard type where nuisance type ordinances currently exist which are difficult to enforce.

What this means is that industry must be alert to any proposed noise ordinance in the communities in which they have facilities. Further, they should have some idea of the noise level their facilities generate at the property line. Armed with the latter information and forewarned of impending legislation, they will be in the position of being able to furnish input to hearings and meetings on the legislation. As we have become painfully aware, once legislation is on the books it is extremely difficult to change. The time for industry to get their opinion across and have it be heard is prior to enactment of legislation.

Following are brief discussions of the model ordinance, its possible future impact on the Petroleum Industry, recommendations relative to the model ordinance and use of interim community noise level design guide criteria (in the absence of existing or proposed ordinances) and examples of typical industrial community noise problem areas. For more information on noise control, we recommend reading API Medical Research Report EA-7301 titled "Guidelines on Noise."

Discussion of Model Community Noise Ordinance Contents

The model ordinance was authored by the National Institute of Municipal Law Officers and the U. S. Environmental Protection Agency.

Briefly described, the report contains a model ordinance for use by cities and counties in the development of noise control ordinances tailored to local conditions and goals. It is a comprehensive, performance-standard noise ordinance intended to overcome enforcement problems associated with the outmoded nuisance law approach to noise control. The report contains sections on the control of noise from both stationary and mobile sources and includes land use planning provisions.

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The report does not contain nor recommend specific values of community noise level limits, but rather generally recommends the adoption of noise limits that will provide for the health and welfare of the local community. It also recommends that localities adopting specific noise level limits consider the technical practicality and economic reasonableness (impact) of noise levels chosen for enforcement.

Major Provisions of Model Community Noise Ordinance

Following is a list of major general provisions of the Model Community Noise Control Ordinance relative to the establishment of a community ordinance:

- . Declaration of Findings, Policy and Scope
- . Definitions and Standards
- . Powers and Duties of the (Environmental Protection) / (Noise Control) Office
- . Duties and Responsibilities of Other Departments
- . Prohibitive Noise Acts
- . Exception and Variances of Noise
- . Sound Levels by Receiving Land Use
- . Motor Vehicle Maximum Sound Levels
- . Land Use
- . Enforcement

Figures 1, 2, and 3 (pages 12, 13, & 14) which appear in the Model Ordinance, summarize graphically the property line levels set by current municipal noise ordinances for various land usages.

The Model Ordinance proposes that communities consider the following land use situations:

- 1) Set property line sound limits for the broad receiving land use categories of residential, commercial, and industrial. Many communities are employing this type of quantitative limit to provide stronger legal control over undesirable sound levels than is attainable with an ordinance containing only nuisance provisions.
- 2) If the community land use/zoning code accurately reflects the actual use of the land, then the designations used for zoning categories may effectively be plugged into the ordinance. On the other hand, if there are numerous discrepancies between the way the land is zoned and the way it is actually used (e. g., commercial establishments in a residential zone), or if there are large tracts of unzoned land, the community may prefer to base property line limits on the actual use of the land. This would provide greater protection for impacted properties.
- 3) A related matter to be considered in controlling property line noise is that of the occasional non-conforming land use. An example is the case of a single residence located in an industrial area. It may not be possible for several manufacturers impacting the residence to lower their noise levels to meet the limit specified for residential areas. Situations of this type will require some discretion in enforcement.

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Figures 1, 2, and 3 and the above discussion illustrate the wide ranges of community noise level limits that can be, and have been, enacted into law for any given land use situation. Some of the lower noise levels would be impractical, technically infeasible, excessively expensive, and overly protective in providing for the comfort, health and welfare of the communities.

The Model Noise Ordinance should provide excellent guidance to communities in the establishment of noise control legislation and control. Since the Model Ordinance does not set specific noise level limits for various land usage situations, problems can be created for industry if a given community ordinance establishes overly restrictive noise limits. Many of the overly protective ordinances, as illustrated in Figures 1, 2, and 3, might not have been enacted into law if local industry had exerted a properly timed, knowledgeable and practical input into the proposed community noise ordinance noise limits before their enactment into law.

Possible Impacts of the Model Community Noise Ordinance

Following are areas which could be strongly affected by the publication of the Model Community Noise Ordinance:

- 1) Accelerate the future enactment of community noise ordinance throughout the U. S. (See "State and Municipal Noise Activities 1973-1974" EPA).
- 2) Increase the financial burdens of the Petroleum Industry in order to gain compliance with new community noise level limits for both stationary and mobile sources.

- 3) Result in enactment of unnecessarily restrictive (low) community noise level limits in many instances. This condition would be particularly true where the ordinance legislators are poorly informed as to the practicality and economic reasonableness of proposed community noise level limits in given land usage situations.

Recommendations Relative to the Model Community Noise Ordinance

The API recommends that its members consider actions relative to the following areas:

- 1) Obtain and study the Model Community Noise Ordinance and any ensuing governmental documents in this related area.
- 2) Maintain awareness of pending or future community noise ordinances involving areas surrounding particular industrial operations.
- 3) Exert influence on local ordinance legislators in an effort to prevent enactment of unnecessarily restrictive community noise levels (see examples on Figure 1, 2 and 3) which could be overly protective of the health and welfare of the community, impractical, and not consistent with good land use planning.

Recommendations Relative to Interim Community Noise Level Design Guide
Criteria

For stationary noise source situations where there is no existing or proposed community noise limit ordinance, it is recommended that API members follow an interim community noise limit design guide criteria. The criteria can be used as a design basis for the installation of new plant equipment and new complexes and noise abatement of existing facilities. Use of the design criteria for new installations should minimize the possibility of community complaints and reduce the need for plant noise abatement retrofitting at higher cost should a community noise ordinance be imposed in the future.

The API Guidelines on Noise, Medical Research Report #EA 7301, Section 1.3, recommends design criteria to minimize community annoyance. Table 1 on page 11 shows recommended day and night maximum community noise level criteria similar to those shown in Report #EA 7301, Table 2. These community noise levels are representative averages of many existing governmental regulations in the U. S. (see Figures 1, 2, and 3) and are usually achievable if a given plant has a nominal distance from its noise sources to its fence line.

It is further recommended that noise level limitations at the community property lines adjacent to the plant should be controlled as follows:

- a) Unless specifically legislated by local, state or federal community noise level ordinances, the maximum residential or industrial community property line design noise limit criteria as shown in Table I can be used for grass roots plants.

- b) In situations where a new complex is to be added to an existing plant, which has a lower existing community noise level than the legislated requirements or the maximum level shown in Table 1, the permissible rise of community noise level should be limited to below 5 dBA (3 dBA design basis). When the noise level approaches the maximum design limits of either Table 1 or local ordinances, the noise contribution for a new complex addition should be limited to zero to minimize the possibility of community complaints from the new noise source. This means that the total noise level contribution of the new addition should be sufficiently below the community noise limit so that its contribution to the total community noise is insignificant.
- c) Where an existing plant community noise level exceeds the limits of Table 1 or local noise ordinance limits, the new complex should be designed so that it will not contribute to the controlling noise level limit. This noise control design procedure for new installations should permit systematic abatement of noise from the existing complex, if required, to eventually satisfy the lower controlling community noise level limit without the new complex becoming a restricting factor.

For further discussions on controlling community as well as in-plant noise, see the API "Guideline on Noise," Medical Research Report #EA 7301."

Examples of Typical Community Noise Problem Areas

The following list illustrates some of the wide areas in which potential community noise problems have been experienced to date in the Petroleum Industry. This list may provide guidance to pinpoint potential community noise

problems for given noise source situations in your operations.

Exploration and Production Operations

Experience - Complaints by residents about noise from compressors in gathering stations.

"Property line" sound pressure level range 53-68dB(A).

Pipe Line Operations

Experience - Complaints received about diesel engine driven pumps and cooling fan noise on electric motor driven pumps at pumping stations.

"Property line" sound pressure level 61 dB(A).

Manufacturing Operations

Experience - Complaints received from residents about:

Flares (pulsating noise)

Furnaces (constant combustion "roar")

Atmospheric Vents (high pitched discrete tones)

Air Compressors for Cat Cracker (low frequency noise)

"Property line" sound pressure level range 61-83 dB(A).

Marketing - Retail Operations

Experience - Complaints on intermittent noise from air blower unit in Tunnel Car Washes.

"Property line" sound pressure level range 76-82 dB(A).

Marketing - Terminal Operations

Experience - Complaints about compressors on vapor recovery units at terminals.

"Property line" sound pressure level range 60-70 dB(A).

Potential Problem Area, All Operations - Truck Noise

Experience - Complaints range from moving noise in residential areas to air starters on diesel trucks during deliveries.

Sound pressure level ranges exceeding 90 dB(A) are common.

Conclusion

It should be realized that once overly restrictive noise ordinances are enacted, they can create great problems and would be difficult to change. Therefore, the previous discussions and illustrations of community noise (as applied to existing or potential community noise control ordinances) should alert members of the Petroleum Industry to the need for active participation in the initial phases of legislation of those ordinances.

This joint industrial-legislative effort will hopefully provide for the enactment of ordinances that are both technically practical and economically reasonable for industry while still providing noise levels consistent with the health and welfare of the community.

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Table 1Guidelines for Community Noise Levels (1)

Area (3)	<u>Sound Level (dBA)</u>	
	Day (2)	Night (2)
Rural (residential)	50	40
Suburban (residential) (also hospital, church, and similar zones)	55	45
Urban (residential) (also apartment)	60	50
Urban (residential) with some commercial, retail, or light industry	65	55
Predominantly industrial	70	60
Heavy industrial, few dwellings	75	65

"Day" represents the period 0700-2200 hours, and "Night", 2200-0700 hours.

(1) These are general guidelines that apply to the nearest boundary of each listed type of community area. The proximity of potentially affected parties may alter the ultimate selection of maximum plant boundary line noise values. Future land useage and development and proposed local community noise regulations should be anticipated.

(2) Night time noise limits are usually the controlling limit for stationary noise source operating 24 hours per day such as refineries, chemical plants, and production facilities.

(3) Receiving land use.

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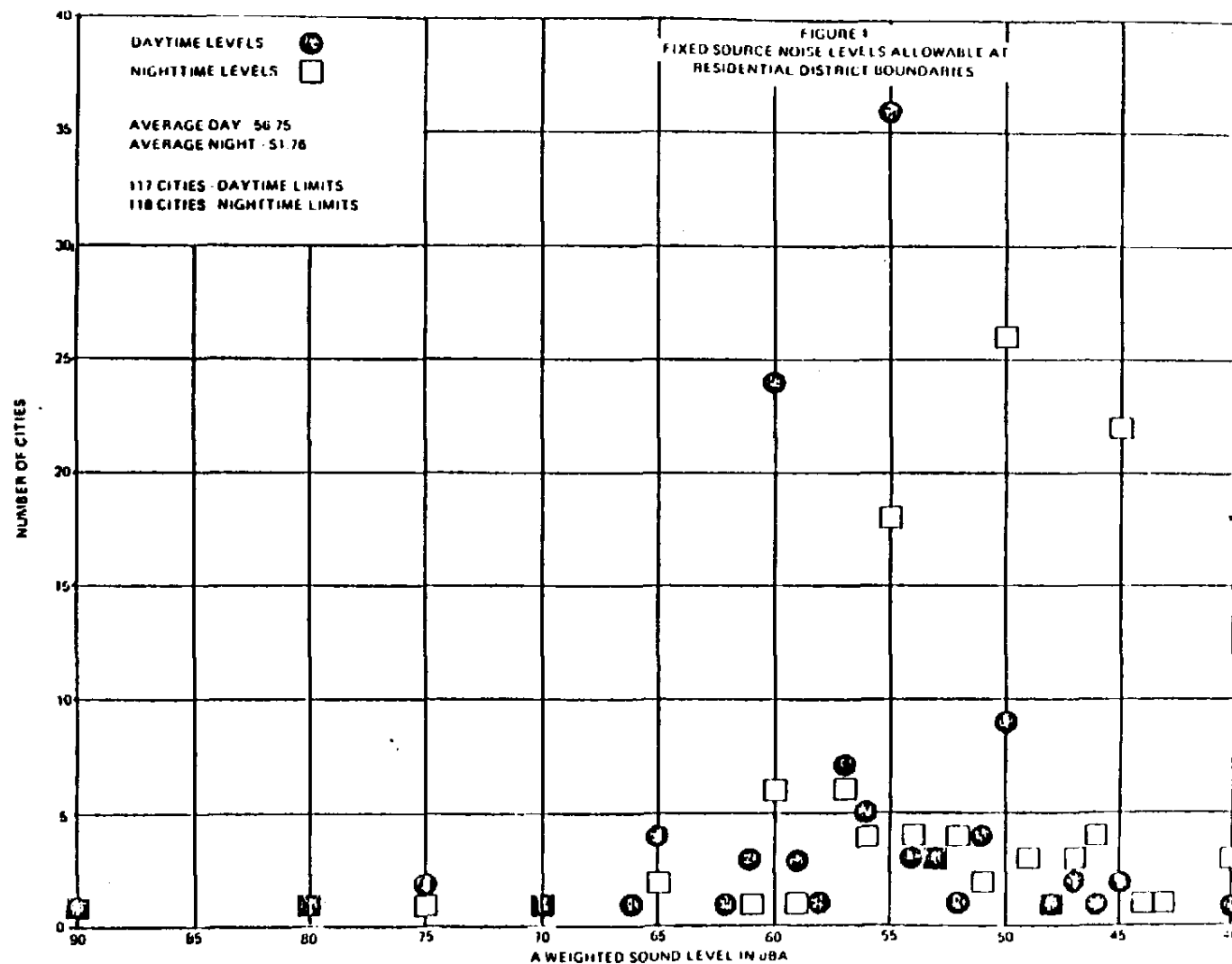


Figure 1. Fixed Source Noise Levels Allowable at Residential District Boundaries

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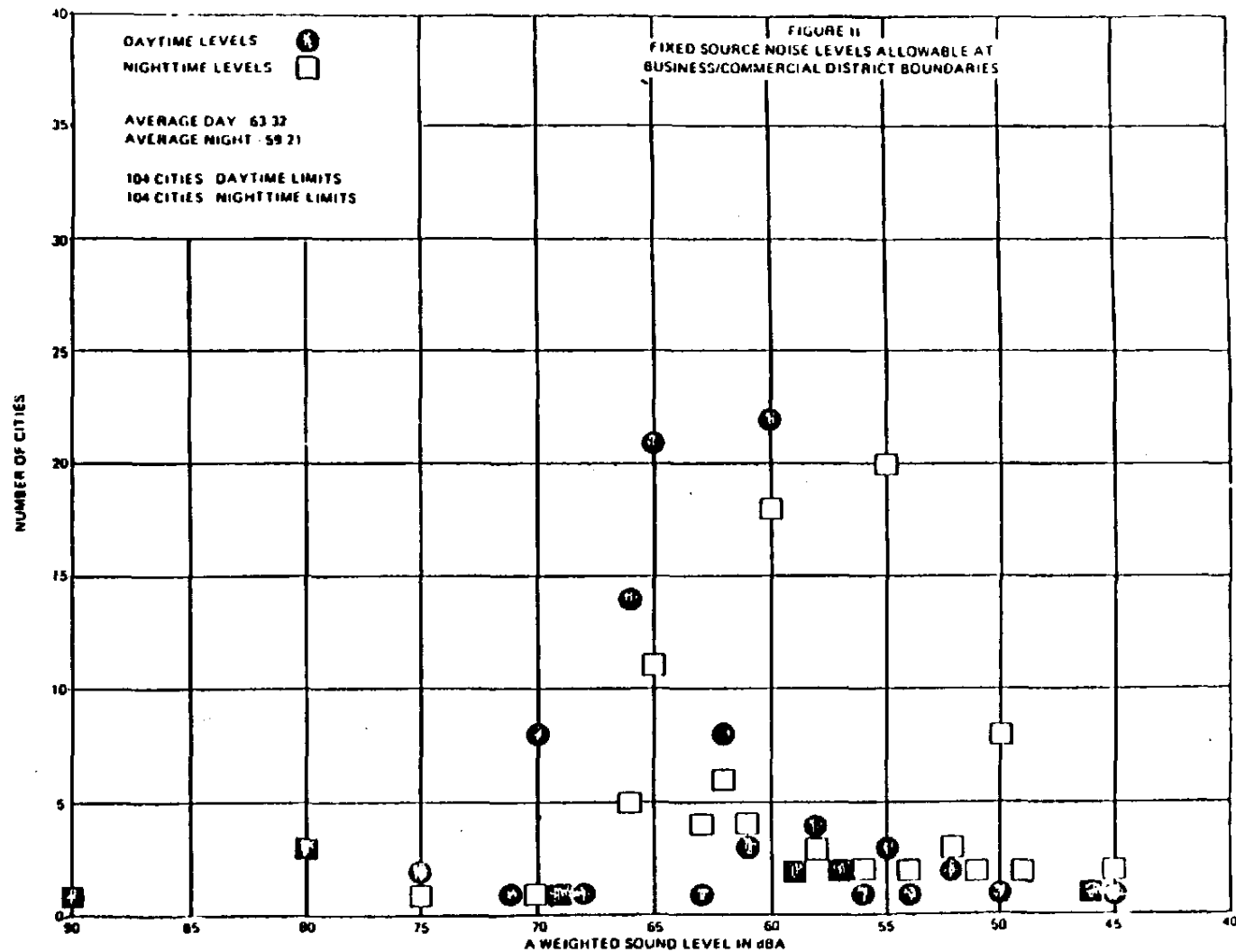


Figure 2. Fixed Source Noise Levels Allowable at Business/Commercial District Boundaries

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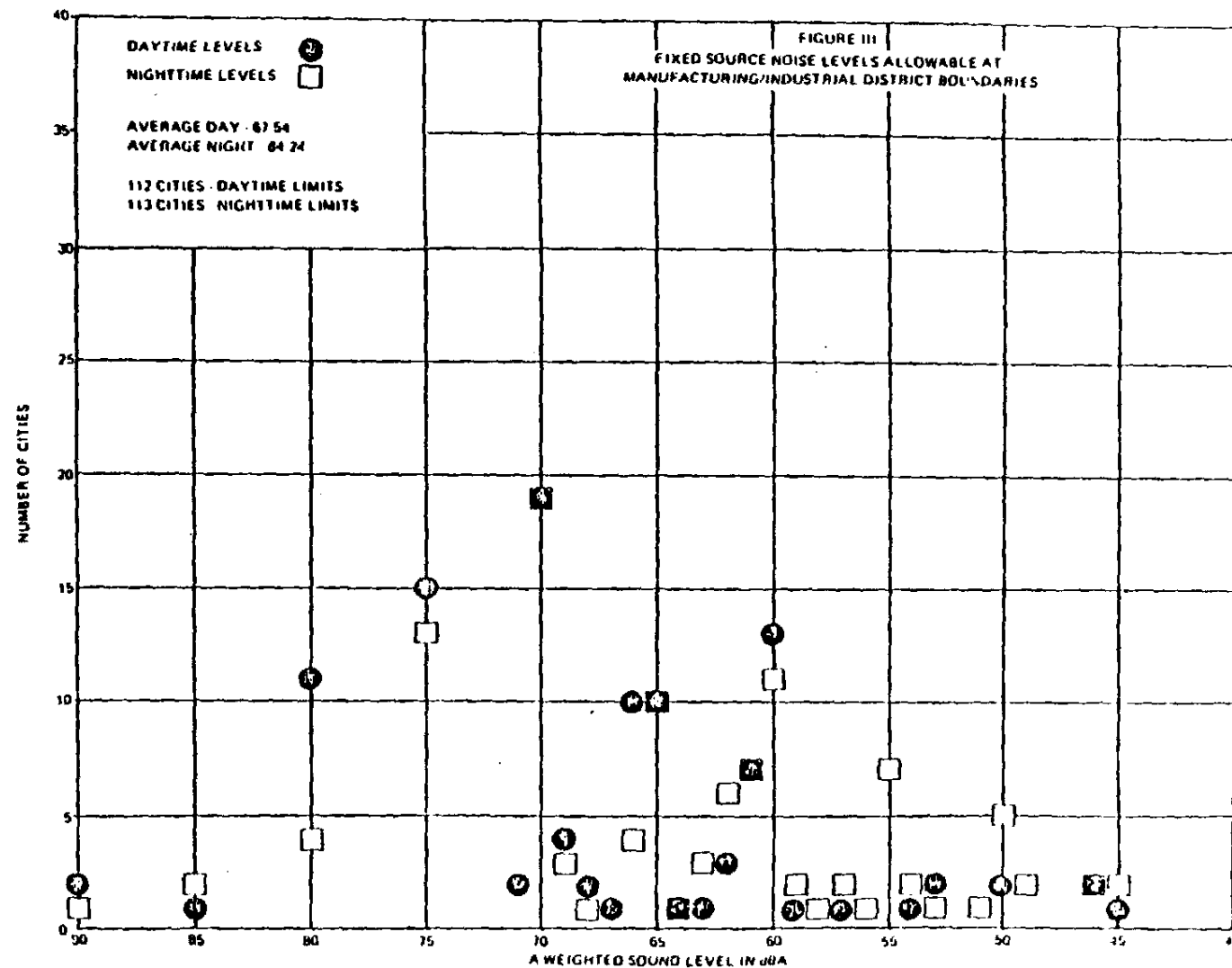


Figure 3. Fixed Source Noise Levels Allowable at Manufacturing/Industrial District Boundaries