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PART V

ENVIRONMENTAL PROTECTION AGENCY

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POLYCHLORINATED BIPHENYLS (PCBS)

Toxic Substances Control

MONS 007740

ENVIRONMENTAL PROTECTION AGENCY

[40 CFR Part 761]

[FRL 728-8; OTS-068006]

POLYCHLORINATED BIPHENYLS (PCBS)

Toxic Substances Control

AGENCY: Environmental Protection Agency.

ACTION: Proposed Rule pursuant to the authority of section 6(e)(1), The Toxic Substances Control Act (Pub. L. 94-469; 90 Stat. 2003; 15 U.S.C. 2601, et. seq., *hereinafter referred to as* TSCA). Provide an opportunity for Informal Hearing pursuant to the Authority of section 6(e)(2) and 6(e)(4), TSCA.

SUMMARY: These proposed regulations prescribe disposal and marking requirements for polychlorinated biphenyls (PCBs) and articles and equipment which contain PCBs. Newly manufactured PCBs, PCB articles, and PCB equipment, as well as PCBs, PCB articles, and *BCB* equipment presently in use, are covered by these requirements. Section 6(e) of TSCA requires the promulgation of rules prescribing marking and disposal of PCBs by July 1, 1977. The intent of these regulations is to protect the environment from further contamination by PCBs resulting from improper handling and use and from release of PCBs to the environment following disposal.

HEARING PROCEDURE AND DATES: In order to promulgate this rule as close as possible to the *deadline* set by TSCA, the following compressed schedule for comments and *informal hearing* is necessary. To the extent specific changes are not set forth below, the proposed procedures for rulemaking under section 6 of TSCA, (40 CFR Part 750) 42 FR 20640 (April 21, 1977), will govern.

Comments on these proposed regulations must be received by EPA prior to the close of business on June 22, 1977. The informal hearing on these proposed regulations will begin at 10:00 a.m. on June 24, 1977, in room 3906, EPA Headquarters, 401 M Street, SW., Washington, D.C. 20460. Requests for participation in the informal hearing must be received by EPA prior to the close of business on June 14, 1977.

All *requests for* cross-examination must be received by the Hearing Clerk within two days after the completion of the legislative part of the informal-hearing. Requests for cross-examination will be acted on by EPA as soon as possible and not later than the deadline in the proposed regulations of one week after receipt. The cross-examinations granted by EPA will begin as soon as possible thereafter. All reply comments must be received by EPA prior to the close of business on the fifth working day after the last day of cross-examination.

Rules on funding public participation in the hearings related to this rulemaking will be published in the FEDERAL REGISTER shortly. These rules will be based on section 6(a)(4) of TSCA.

INFORMATION CONTACT:

David E. Wagner, Office of Toxic Substances (WH-557), Environmental Protection Agency, 401 M Street, SW., Washington, D.C. 20460, 202-426-9000. Joni T. Repasch is the Record and Hearing Clerk for this rulemaking. The official record of rulemaking is located in Room 725 WSME, EPA Headquarters, 401 M Street, SW., Washington, D.C. 20460, 202-426-9000. able for viewing and copying from 9 a.m. to 4 p.m., Monday through Friday excluding holidays. Hearing transcripts and other hearing material shall be added to the record as soon as feasible after they become available.

SUPPLEMENTARY INFORMATION: A support document titled, "PCB Marking and Disposal Regulations—Support Document," is available. Mrs. Joni T. Repasch, Room 713 WSME, 401 M Street, S.W., Washington, D.C. 20460, Telephone 202-426-9000, can provide information on obtaining copies of the document. This document contains PCB background information, PCB effects information, economic analyses of regulatory action, regulatory support information, and the list of documents contained in the official record of rulemaking.

Comments on these proposed regulations must be received by EPA prior to the close of business on June 22, 1977, and should be sent to the Environmental Protection Agency, Office of Toxic Substances (WH-557), 401 M Street, SW., Washington, D.C. 20460, Attn: Joni T. Repasch.

LEGAL AUTHORITY

Section 6(e) of TSCA states, "Polychlorinated Biphenyls

"(1) Within six months after the effective date of this Act the Administrator shall promulgate rules to

(A) Prescribe methods for the disposal of polychlorinated biphenyls, and

(B) require polychlorinated biphenyls to be marked with clear and adequate warnings and instructions with respect to their processing, distribution in commerce, use, or disposal or with respect to any combination of such activities.

Requirements prescribed by rules under this paragraph shall be consistent with the requirements of paragraphs (2) and (3).

Paragraphs (2) and (3) apply to bans on manufacturing, processing, and distributing in commerce and will be addressed at a later date. The definitions of polychlorinated biphenyls contained herein are consistent with definitions that EPA intends to use for rulemaking under paragraphs (2) and (3).

The legal authority contained in the Resource Conservation and Recovery Act (RCRA), Pub. L. 94-580, has not been used in the regulation. However, RCRA requires that by April 21, 1978, EPA identify hazardous wastes; establish a permit system for treatment, storage, and disposal of hazardous waste; and establish a manifest system for the disposition of wastes, as well as monitoring and recordkeeping requirements for hazardous waste management facilities. Thus, PCB-*containing* solid wastes that meet the criteria for "*hazardous waste*" may also be subject to broader regulations being developed under RCRA. If *conflicts* arise between the RCRA and TSCA approaches, the TSCA regulation could be amended or an exception to RCRA requirements could be granted.

DISCUSSION OF THE RULE:

BACKGROUND

Polychlorinated biphenyls (PCBs) are mixtures of the chemical compounds formed by the chemical bond of two benzene molecules into a biphenyl molecule with varying numbers of chlorine atoms attached to the biphenyl molecule. PCBs are among the most stable organic compounds known and exhibit other properties that render them useful as dielectric and heat transfer fluids. PCBs are currently used primarily in capacitors and *transformers*. They are also used in investment casting waxes and in the cooling systems of mining machinery.

Of the roughly 1.85 billion pounds of PCBs introduced into commerce in the United States since 1929, only 85 million pounds have been destroyed by incineration or by degradation in the environment. 290 million pounds are under varying degrees of control in landfills and dumps, and 150 million pounds are free in the environment. 758 million pounds are currently in service.

Of the *approximately* 758 *million* pounds currently in service, 750 million pounds are in electrical transformers and capacitors as follows:

Transformers—140,000 items totalling 600,000,000 pounds of PCBs

Large high voltage capacitors—2,000,000 items totalling 200,000,000 pounds of PCBs

Large low voltage capacitors—20,000,000 items totalling 200,000,000 pounds of PCBs

Small capacitors for highway lighting—25,000,000 items totalling 50,000,000 pounds of PCBs

Small capacitors in small appliances—80,000,000 items totalling 50,000,000 pounds of PCBs

Small capacitors in fluorescent light ballasts—300,000,000 items totalling 50,000,000 pounds of PCBs.

The transformers have a 40-year average life, and the other items have a 15- to 20-year average life. The relatively long life of these items will result in an equally long time period during which disposal of PCBs will be required.

Although PCBs have long been known to be extremely toxic, only in recent years have they been acknowledged to be a general threat to the environment. They have been found in significant concentrations in waterways and sediments throughout the world. They are a widely spread contaminant of fish and wildlife resources. Recently, they have been identified in the milk of nursing mothers throughout the United States.

PUBLIC PARTICIPATION IN THE DEVELOPMENT OF THE REGULATIONS

On December 20, 1976, a public panel meeting was held and representatives of key public and private organizations

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were invited to participate in a discussion on the primary issues involved in these regulations. A notice of this meeting was published in the FEDERAL REGISTER prior to the meeting. (See 41 FR 53693I, December 8, 1976). On January 24, 1977, a public meeting was held on the development of these regulations and any interested person could request time to speak on any matter related to the regulations. A FEDERAL REGISTER notice (FR 3701 January 19, 1977) was published prior to the public meeting which contains a discussion of key issues and requested public comment on those issues.

GENERAL DEFINITION

The definitions of "Administrator", "Agency", "chemical substance", "distribute in commerce", "manufacture", and "process" are identical to the definitions of these terms in TSCA. The definitions of "mixture" and "person" are taken from the definitions in the proposed regulation 40 CFR Part 700, Toxic Substances Control, General Provisions.

CHEMICAL STRUCTURES INCLUDED IN DEFINITION OF PCBS

"PCB chemical substances" are defined as chemical substances which are limited to the biphenyl molecule that has been chlorinated to varying degrees. This definition is the basic building block for defining other forms of PCBs. Any modification other than chlorination to the molecule is sufficient to remove the resultant molecule from classification as a PCB.

One option considered was to broaden the definition of PCB chemical substances by altering the definition to read "* * * any chemical substance which includes the biphenyl molecule which has been chlorinated to varying degrees * * *." Such a broadening would include substances that have been altered by chemical reactions such as bromination, ammoniation, or hydroxylation. This would include a number of chemicals widely used in industry such as dichlorobenzidine, chloroterphenyls, and chlorinated solvents. This option is not proposed at this time because additional investigation is needed to determine the complete scope of chemical substances that would be included. Additionally, a more complete understanding of health, environmental, and economic effects of an expanded definition is necessary.

PCB MIXTURES, WASTE MATERIALS, AND SLUDGES

"PCB mixture" are defined to mean mixtures, except sludges from municipal sewage treatment facilities, that contain 0.05 percent or greater of PCB chemical substances (on a dry weight basis). The definition for PCB mixtures covers mixtures that will be found in commercial applications and as waste materials. Transformer coolants and liquid dielectrics such as Askarels may be a blend of several PCB chemical substances and may contain solvents such as trichlorobenzene. The resulting mixture is then the chemical to which these regulations apply. These commercial fluids always contain a concentration of PCB chemical substances well above the 0.05 percent level. Dielectric liquids in capacitors usually contain 99 percent PCB chemical substances, and the PCB coolant fluids in transformers range from 60 to 90 percent PCB chemical substances. Other commercial chemicals such as chlorinated solvents and polychlorinated terphenyls also contain PCB chemical substances as byproducts of the manufacture of these chemicals. Polychlorinated terphenyls are reported to contain from 0.5 to 5 percent PCB chemical substances,[1] and hexachlorobenzene may have a PCB chemical substance concentration of 0.4 percent or higher. As a consequence, the disposal of these chemicals would have to meet the conditions of this regulation. Another group of PCB mixtures are waste materials. This group includes chemical substances and mixtures that become contaminated with PCB chemical substances as a result of commercial uses of PCB chemical substances and PCB mixtures, incidental exposure to PCB chemical substances and PCB mixtures during commercial activities, and environmental exposure to PCB chemical substances and PCB mixtures as a result of accidents and spills. Examples of such waste material include contaminated solvents used in cleaning operations, contaminated dielectric liquids used as substitutes in PCB electrical articles previously containing PCB mixtures, contaminated machinery and equipment used in PCB activities, contaminated rags and clothing, and contaminated soils, gravel, or paving materials.

The level of 0.05 percent or 500 parts per million was selected because it draws a line between those commercial products which are generally called PCBs and used as such and other widely used commercial products which may contain PCBs produced as a side effect of the manufacturing process. Though these latter chemicals may eventually require regulation, their commercial uses and essentiality have not been adequately reviewed at this time. Accordingly they have been omitted from this regulation without prejudice to their possible regulation at some later date. Some parties believe that wastes with very low levels of PCBs may present risks and should be regulated as PCBs. However, present knowledge of the dimensions of the waste problem is fragmented. Many of the wastes of concern are not recognized primarily as PCB wastes, but rather as waste oils (contaminated with PCBs) or industrial sludges containing PCBs. Accordingly, at the present, wastes are being regulated on the same basis as commercial products. Comments on this approach are particularly invited.

Later this year, when additional regulations are proposed limiting the manufacturing, processing, and use of PCBs, it may be possible to distinguish more clearly when an item or material becomes a waste. Additionally, regulations being developed under the Resource Conservation and Recovery Act (RCRA), Pub. L. 94-580, will also refine waste materials. A possible consequence of these later regulations may be to lower the concentration of PCBs in the definition of waste materials. In the interim care must continue to be exercised in disposal of waste materials with lowed levels of PCB concentrations to avoid violating any water or air standards. Current water discharge standards for PCBs are very stringent ranging from zero discharge for capacitor and transformer manufacturing to one part per billion for other discharges.

Some mixtures that may contain more than 500 parts per million PCB chemical substances will not be affected by these regulations until their use is altered. For example, this regulation would not require that bottom sediments in rivers and harbors be removed from the watercourses. If they are removed for any reason such as dredging or excavation, the disposal of these sediments would have to meet the disposal provisions of this regulation. Similar considerations apply to contaminated soils.

In general, municipal sewage sludges seldom have contamination levels over 500 parts per million and, therefore, will not be affected by this regulation. Environmental management of these sludges is possible under a variety of Federal and State regulatory programs, and the effective integration of these programs is considered to be the most desirable approach to control this problem.

With regard to spills, more stringent requirements may be stipulated during a spill by spill-control personnel using other legislative and regulatory authority such as the Federal Water Pollution Control Act (Pub. L. 92-500) and the Safe Drinking Water Act (Pub. L. 93-523). Later regulations under TSCA or RCRA could also lower the concentrations limits that would be applicable to spills.

PERSONS AFFECTED BY THE REGULATION

The regulation applies to all persons who manufacture, process, distribute in commerce, use, or dispose of PCBs. Since persons include local, state, and Federal governments, the applicability is very broad.

Some of the most common commercial enterprises and activities that will be subject to the regulations are electric power utilities which operate PCB transformers and large capacitors, owners of buildings and industrial facilities that use PCB transformers and large capacitors, highway departments and industrial facilities that use special high intensity lighting systems, service shops that repair small appliances with PCB capacitors, service shops that repair and refill PCB transformers. Other categories of affected commercial enterprises include manufacturers that produce new electrical items containing PCBs and owners and

[1] USEP-OTS. "PCBs in the United States: Industrial Use and Environmental Distribution." Feb. 26, 1976. Versar, Inc.

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operators of facilities used to store or dispose of waste PCBs.

USING THE REGULATION

PCBs have been widely used, and, as a consequence, are present in a wide variety of commercial products and waste materials. This regulation has developed a set of definitions to carefully define and categorize the most significant forms of PCBs. Since PCBs are a complex chemical and many of the articles and equipment in which they are used are also complex, the resulting definitions and regulatory requirements should be carefully examined. In addition, the disposal methods for PCBs, notably incineration and chemical waste landfills, are sophisticated processes that must be designed and operated in accordance with precise specifications to insure adequate environmental protection. For these reasons, the language used is somewhat complex. However, suggestions for improvements would be especially welcome.

The regulation contains three primary parts: Definitions, requirements for disposal and marking, and annexes which provide detailed specifications concerning required actions. Later sections of the preamble discuss some of the key provisions of the regulation.

Since electrical items use the majority of PCBs, all owners or operators of buildings or industrial facilities should examine their electrical systems. If transformers are present, manufacturer's literature, old markings, or other information may be available to assist in determining whether they contain PCBs. PCB transformers are often used in indoor applications or other situations where fire is a concern. A sample of the contents might be analyzed to determine the presence of PCBs. If there is a question about the contents, it would seem prudent to assume PCBs are present and to handle the transformer accordingly. Large high voltage capacitors are used mostly by electric utilities which will probably be aware of the presence of PCBs. However, large low voltage capacitors are often used in buildings and industrial operations for power factor corrections to conserve energy by providing more efficient use of power. Many commercial building owners or operators may not be aware of the presence of these capacitors unless they consult their electricians or electric utilities.

Outdoor area lighting systems such as those maintained by highway departments, public utilities, and industrial complexes may contain PCB capacitors. Public transit systems using electrically powered rolling stock often have PCB transformers and capacitors in use at fixed facilities as well as on the rolling stock.

Electrical service operations such as appliance repair will encounter small PCB capacitors in electrical equipment such as microwave ovens, air conditioners, and certain brands of television sets. Other service operations such as transformer repair shops will have transformers and containers of liquid PCBs. Containers of liquid PCBs may also be present at public utility or public transit facilities. Waste oil handlers may have oils contaminated with PCBs, and only a competent analytical procedure will verify the concentration of PCBs present.

If PCBs are present, the definitions of PCBs in the regulation should be examined to determine the appropriate PCB category. If the PCBs are in transformers or capacitors, then they are PCB articles. If they are in containers of PCB liquids they are probably defined as PCB mixtures. Pure PCB chemical substances are rarely found in commercial applications. Therefore, PCB mixtures usually become the working definition. If the PCBs are present in air conditioners, microwave ovens, or television sets, then these items will be categorized as PCB equipment.

Having determined the appropriate categorization, the disposal and marking requirements in Subpart B and C should be consulted to determine appropriate disposal or marking action. For example, the contents of a container of liquid PCB mixture must be incinerated as stated in § 761.10(b)(1) of Disposal Requirements; the container must be marked with a warning mark as stated in § 671.20(a)(3) of Marking Requirements; and the empty container must be disposed of as stated in § 761.10(e) of Disposal Requirements. Since a PCB transformer or capacitor is defined as a "PCB article," a person disposing of them would refer to § 761.10(c) "PCB Articles" of Disposal Requirements for appropriate instructions. Likewise, if a spill of PCB's occurs, § 761.10(f) Spills would be examined for instructions. When incineration is required under the Disposal Requirements, the incinerator will have to meet the technical requirements of Annex I, § 761.40. The owner or operator of an incinerator must be familiar with Annex I in detail and obtain all of the necessary approvals. To meet the marking requirements, the person responsible for the container would have to review Annex V, § 761.44 to determine the form and size of the marking. When he obtained the proper markings, he would apply them as directed under § 761.20, Marking Requirements, and not have to refer to Annex V until he needed to procure more markings. If storage is required during the disposal phase or if chemical waste landfills are used for disposal, then Annex III, § 761.42, and Annex II, § 761.41, respectively, would have to be examined for specific information on performing those actions. Annex IV, § 761.43, must be consulted if decontamination procedures are to be performed.

Annex VI, § 761.45, Records and Monitoring, is quite broad in its application, as it affects some persons with PCBs in service and all persons who own or operate storage or disposal facilities.

SPECIAL PRECAUTIONS FOR WORKERS

This regulation requires many handling and processing steps in the marking and disposal of PCBs which may result in exposure of workers to PCBs, particularly when leaking containers, electrical articles, or spills are encountered. Special precautions should be taken to avoid skin contact and ingestion of the PCB chemicals. Proper protective clothing and protective breathing devices are essential. Personal decontamination by actions such as hand washing and removal of contaminated clothing is necessary before eating or smoking.

ARTICLES, CONTAINERS, AND EQUIPMENT

Because of the wide commercial distribution of PCBs, it is necessary to include within these regulations other articles which may have come into contact with PCB chemicals and been contaminated by them. It is also necessary to include other articles of commerce that may not be contaminated but are in integral part of commercial activity involving PCBs.

"PCB article" includes any manufactured item other than PCB containers whose surfaces have been in direct contact with PCB chemical substances or PCB mixtures. The definition includes commercial products such as electrical capacitors and transformers that have liquid PCB chemical substances and PCB mixtures contained within the internal mechanisms as a functioning part of the electrical device. Other examples of PCB articles are piping, pumps, radiators, and other components of heat transfer systems and electric motors that use PCB chemical substances and PCB mixtures as an internal coolant.

"PCB container" means any package, can, bottle, bag, barrel, drum, tank, box, or other device used to contain PCB chemical substances, PCB mixtures, or leaking PCB articles. The definition includes devices that have PCB chemical substances or PCB mixtures in direct contact with the internal or external surfaces of the device but where the PCB chemical substances or mixtures are not performing any function by being in the device. The device simply contains PCB chemical substances or mixtures. This differs from a PCB article where the PCB chemical substances or PCB mixtures are essential to the proper functioning of the article. A separate definition for containers is necessary to facilitate the incorporation of specifications for container integrity, decontamination, and marking.

"PCB article container" means any package, can, bottle, bag, barrel, drum, tank, box or other device used to contain PCB articles. This includes containers used to package or protect PCB articles that are intact and not releasing PCB chemical substances or mixtures from the internal enclosure of the article. Thus, PCB article containers do not have PCB chemical substances or PCB mixtures on the surfaces of the container and, when the PCB article is removed from the PCB article container, the container no longer requires special marking, handling, or disposal. Buildings are not considered to be article containers.

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"PCB equipment" means manufactured items, other than a PCB container or a PCB article container, that contain PCB articles. PCB equipment would contain PCB articles only because the articles were performing a function in the equipment. Examples of PCB equipment are television sets, microwave ovens, high intensity lights, and fluorescent light fixtures that use a PCB article such as a capacitor containing PCBs. The distinction between PCB equipment and PCB articles is necessary to adjust the marking and disposal requirements for PCB equipment and PCB articles in a manner that provides adequate control in the least burdensome manner.

The phrases "PCB" and "PCBs" mean one or more of the following: "PCB chemical substance", "PCB mixture", "PCB article", "PCB container," and "PCB equipment." This definition is included only to provide an abbreviated reference to the different forms of PCBs.

ELECTRICAL ARTICLES AND EQUIPMENT

Several categories of electrical capacitors are defined to facilitate the application of different requirements for different categories of capacitors for marking and disposal. Large capacitors contain three pounds or more of dielectric, and small capacitors contain less than three pounds. This breakpoint was selected because freestanding capacitors used in electrical distribution systems always contain three pounds or more, and capacitors with less than three pounds are usually found as a component within some other item of electrical equipment. The State of Michigan uses the same breakpoint in its definitions. The large capacitors are further broken down between low voltage (less than 2000 volts a.c.) and high voltage (2000 volts a.c. or greater). The high voltage capacitors are used almost exclusively within the electric utility industry as a power factor correcting device in electrical distribution systems. Therefore, any regulatory control for large high voltage capacitors involves principally the electric utility industry.

Large low voltage capacitors are used as power factor correcting capacitors within many large buildings and are often owned by the building owners. The only categorization of small capacitors is for HID capacitors, which are capacitors used in a high intensity discharge lighting fixture, such as along highways and in industrial lighting systems.

Fluorescent light ballasts which contain small capacitors are specialized items of electrical equipment used in fluorescent light fixtures. Almost all of these capacitors contain PCB chemical substances or PCB mixtures as a dielectric. Approximately ninety-five percent of the 200 million fluorescent light ballasts currently in service are used in commercial and industrial buildings including apartment buildings. The remaining five percent are in private residential units.

DEFINITION OF DISPOSAL

Disposal is defined very broadly to include any action that may be related to the ultimate disposition of a substance, article, or mixture. An accidental or intentional release of PCB chemical substances or mixtures to the environment, including spills, is considered to be an act of disposal. In almost all cases, this type of disposal action would not be in compliance with the methods proposed in the regulation. As noted above, a spill would be classified as improper disposal under this regulation. This does not preclude any actions that could be taken under the provisions of the Federal Water Pollution Control Act (Pub. L. 92-500) for spills.

DEFINITION OF TRANSPORT VEHICLE

Transport vehicles are considered to be motor vehicles or railcars used to transport cargo. If this cargo contains PCBs as defined in these regulations, then special marking requirements apply. However, the marking or labeling requirements apply only when PCBs are being carried on the transport vehicle as cargo. A PCB transformer used on an electric locomotive, for example, would not result in the locomotive being considered as a transport vehicle. The application of warning placards to trucks and railcars and the operation of self-powered vessels, barges, and aircraft carrying toxic materials is under the jurisdiction of the Department of Transportation (DOT). DOT is presently considering regulations covering the transport of various environmentally hazardous materials including PCBs. Therefore, the Agency does not believe that this regulation is the appropriate instrument to initiate a totally new kind of marking requirement within the transportation industry.

METHODS OF DISPOSAL

High temperature incineration is the primary disposal method for PCBs. This disposal method is the only technique that will result in the destruction of PCBs and prevent the eventual escape of the chemical to the environment. Properly operated chemical waste landfills may provide an element of security for the containment of PCBs for long periods of time, but the ultimate fate of PCBs using this disposal method is unknown.

EPA recognizes that in some cases accidental spills and other losses to the environment from incineration operations might release more PCBs than careful chemical waste landfill operations. The proposed approach also relies on improving the incineration of PCB articles, particularly capacitors. Nevertheless, EPA proposes to rely primarily on incineration for PCB disposal. The Agency especially invites comments on this issue.

Existing disposal practices are a combination of the two methods, with some liquid PCBs being destroyed by high temperature incineration and some PCB articles and PCB mixtures being disposed of in chemical waste landfills.[1] In addition, some liquid PCBs are also being sent to chemical waste landfills, particularly in California.[1] The remaining PCBs are either being sent to municipal solid waste disposal systems or are being disposed of in industry operated facilities that are analogous to municipal solid waste systems.[1]

All PCB chemical substances, PCB mixtures, PCB articles, and PCB containers are to be disposed of by high temperature incineration with the following exceptions:

(A) PCB transformers that have had the liquid PCB chemical substances and mixtures drained from them, in such a manner that no more than two percent of the original volume of dielectric liquid measured to the manufacturers recommended fill line remains in the transformer, may be disposed of in a chemical waste landfill. This exception is necessary because of the large size of electrical transformers that makes it impossible to fit the transformer into an incinerator unless a major demolition of the transformer is first undertaken. If the transformers are carefully drained, hazards related to this disposal method should be minimal. If the transformer is not drained sufficiently to meet the criterion, then the transformer must be either incinerated or stored under the provisions of the regulation until the transformer can be successfully drained.

(B) Until July 1, 1978, approved chemical waste landfills may be used for the disposal of non-liquid PCB mixtures in the form of contaminated soil, incineration residues, sludges, dredge spoil, rags, and other contaminated debris. Approved chemical waste landfills may also be used for the disposal of PCB articles such as PCB capacitors and other PCB articles (e.g., special electric motors and hydraulic systems). This period of use for chemical waste landfills should help provide an orderly transition of disposal practices as well as allowing time for the design and the construction of adequate incineration facilities. All of the chemical waste landfills used for PCB disposal will be required to meet the landfill requirements in this regulation and any applicable RCRA regulations when they are promulgated.

(C) Small PCB capacitors that are used in private housing units and are discarded by the occupants of these housing units are exempted from the regulation in view of the practical difficulties in attempting to channel these items to incineration facilities or chemical landfills. This means that the article can be placed into the normal trash collection system used by the occupants. Usually the refuse will then be deposited in either sanitary landfills or municipal incinerators. Minimal environmental risk should result from the small quantity of PCBs that would result from the random discarding of such items by private householders.

[1] USEPA-OTS. "Macroeconomic Impacts of the Proposed Marking and Disposal Regulations for PCBs." April 1977, Versar, Inc.

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SPECIAL DISPOSAL PROBLEMS FOR WIDELY DISTRIBUTED ARTICLES

An extremely difficult regulatory problem is created by the fact that one-third of the PCBs in service (350 million pounds) are distributed widely across the country in large low voltage capacitors in buildings and large electrical equipment, in small capacitors for highway lighting, in small capacitors in appliances, and in small capacitors in fluorescent light ballasts. These PCBs are in 895 million individual capacitor units, of which 800 million units alone are in the fluorescent light ballast category.

An additional 290 million pounds of PCBs are in landfills and dumps, including 110 million pounds in capacitor and transformer production wastes, 100 million pounds in miscellaneous waste papers and plastics, and 80 million pounds in discarded electrical articles.

The current problems associated with PCBs arise from the 150 million pounds now present in the environment. Some proportion of the 290 million pounds in landfills and dumps could eventually be released to the environment. Similarly, if no controls are placed on the future disposal of large low voltage and small capacitors, some amount up to an additional 350 million pounds of PCBs could be added. Thus, up to 640 million pounds of PCB could potentially be released to the environment. The rate of release of these PCBs is unknown.

With respect to 350 million pounds of PCBs in service in capacitors, EPA faces a dilemma. On the one hand, the Agency believes that there would be an environmental risk if no control is exercised on these sources, in particular the disposal of large low voltage and small capacitors. On the other hand, the control problems are extremely difficult given the wide distribution of these PCB-containing articles in our society. Additionally, controls applied through a regulatory program would be difficult to enforce. Imaginative approaches are needed to channel these capacitors, when their useful life is finished, toward proper disposal facilities. A variety of options seem possible, ranging across a spectrum of regulatory and nonregulatory approaches.

For those capacitors handled by repair shops and commercial building maintenance service firms, environmentally sound disposal might be induced by an effective education and information program. Backed by some incentive stimulus, the education and information program could be jointly developed by trade organizations and the Agency.

One innovative example of Federal stimulus could be the establishment of a "bounty" program whereby a payment could be provided for capacitors brought to special collection points. Such a program would probably require legislative authority as well as a careful study to determine potential effectiveness.

For capacitors within private homes, a strong education and information program is also a necessity. However, for these capacitors, as well as for the other small units, an effective system of collection and transfer points must be set up to assure completion of the trip from the original location of the capacitor to an approved disposal site.

If strong regulation is required, several regulatory options can be considered. By way of example, four options applicable to fluorescent light ballasts were reviewed.

One option was to require high temperature incineration for ballasts from "large" buildings defined by the square footage of the building. The option was not selected because a clear breakpoint between large and small buildings was not apparent. A series of small buildings under the control of a single management organization could establish a collection and disposal program as readily as one could be established based on building size, but a clear rationale on the appropriate size of a management organization was not apparent.

Building demolition contractors are another source of ballasts, and a second option to place controls on these contractors was also considered. This option was not adopted because of the need to categorize large and small contractors and the expected difficulty in successfully removing fixtures prior to demolition.

A third option was to require all ballasts to go to high temperature incineration except for those used in private residences. This option would reduce any confusion on applicability and would account for a substantial quantity of PCBs. However, effective enforcement would be difficult since approximately 1,000,000 persons would be affected by the requirement.

A fourth option is to exempt ballasts from any special disposal requirements, but include in the regulation a note which encourages persons to collect and dispose of ballasts in chemical waste landfills or high temperature incinerators. This option was adopted for the proposed regulation.

In summary, the proposed regulation proposes to regulate most capacitors other than fluorescent light ballasts. However, the Agency has some reservations about the practicality and enforceability of its regulatory proposals for large low voltage and small capacitors. The Agency therefore especially solicits comments on these proposals and on alternatives that could help to deal effectively with the problem of wide distribution of PCB-containing capacitors and lead toward effective control of the risks associated with capacitor disposal.

STANDARDS FOR INCINERATION OF PCB'S

Proper incineration of PSBs involves a suitable balance among combustion temperatures in the incinerator, dwell time of the waste materials and combustion products in the firing chamber, and oxygen exposure. Investigations into incineration requirements by industry and government representatives under the auspices of the American National Standards Institute (ANSI) [*] resulted in ANSI recommendations for the incineration of liquid PCB chemical substances and mixtures. These recommendations have been adopted in this regulation.

Since hydrochloric acid mist is formed in the combustion process, suitable measures must be taken to adequately remove the acid from the exhaust gases. If a water scrubber is used, its effluent may contain low levels of PCBs and can be treated using available carbon adsorption technology.

Since June 1971, the Monsanto Company has operated a liquid injection incinerator to dispose of liquid waste and contaminated PCBs. This experience tends to reinforce the soundness of the approach proposed in this regulation.

The incineration of solid forms of PCBs is currently being undertaken by EPA programs and includes the incineration of PCB capacitors and PCB equipment using both a crushing operation prior to incineration and incineration of intact articles. Early results clearly indicate the feasibility of the technique, including effective destruction. The technologies involved are well demonstrated, and the principal task is adapting them to a new use. In addition, the Agency believes that, in response to this regulation, industry will continue to push technical progress in the direction necessary for proper environmental protection. Solid residues from the incineration of PCB solids may contain residual quantities of PCBs that can range from very low levels up to several hundred parts per million. However, the EPA has not determined what disposal requirements (if any) for these residues should be established in order to provide adequate environmental protection. Public comment is especially invited on this matter.

To provide an approval process for liquid and solid waste PCB incinerators, the EPA Regional Administrator will be required to authorize an initial monitoring and review of a trial burn at the incinerator to include the sampling and analyses of at least eight basic air emission parameters. Other parameters may be required by the Regional Administrator if, in his judgment, they are needed to adequately evaluate any incinerator proposed for the incineration of PCBs.

Also, in the review and approval process for PCB incinerators, requirements may be issued by the Regional Administrator for the periodic monitoring of any parameters on a frequency that he believes appropriate. A waste feed system will have to be employed that is capable of automatically terminating the flow of waste into the combustion system in the event that the combustion temperature or excess oxygen levels are reduced below the minimum level specified in the requirements or in the EPA facility approval. Shut down will also be required whenever malfunctions occur in continuous monitoring equipment for measuring CO_2, CO and waste feed rate.

Guidance on sampling and analytical procedures will be available at the EPA Regional Offices and at EPA Headquarters in Washington, D.C. The avail-

[*] ANSI. "American National Standard Guidelines for Handling and Disposal of Capacitor- and Transformer-Grade Askarels Containing Biphenyls," ANSI-C107.1-1974.

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ability and locations of guidance documents will be announced in the FEDERAL REGISTER. The technology for incinerator emission monitoring is highly complex and in a continuing state of development. However, since the number of facilities potentially eligible to qualify as incinerators for PCBs is small, the Agency will be able to render technical advice on sampling and analytical procedures to the owners or operators of these facilities on an individual basis.

STANDARDS FOR CHEMICAL WASTE LANDFILLS

The requirements proposed in this regulation for the design and operation of a chemical waste landfill are derived chiefly from the guidelines set forth by the Texas Water Quality Board (TWQB). Considering the successful performance and the degree of specificity in the TWQB guidelines, the guidelines were considered to be an acceptable basis on which to build the requirements in this regulation. The requirements will facilitate site approvals by EPA Regional Administrators and also provide a specific basis for insuring compliance.

The Agency considered the alternative of referencing the regulations that are to be developed under RCRA. However, the time period between the promulgation of this regulation and the later date when the promulgation of the RCRA regulations are expected would allow an unacceptable gap in adequate PCB disposal and lead to considerable uncertainty concerning action for which preparations must be initiated now.

In determining the integrity of chemical waste landfills from the history of those in operation, compliance with strict design criteria and the implementation of a comprehensive leachate monitoring program have been found to be the key items. In California, Illinois, New York, and Texas, facilities approved by the States are located in such secure geologic areas that they do not overlie any usable groundwater, thus guaranteeing maximum environmental protection of groundwater. The leachate collection systems which have been designed as part of these facilities provide a means for capturing any harmful constituents that may eventually migrate to the bottom of the chemical waste landfill. The leachate is pumped back to the surface for treatment in order to provide maximum environmental protection.

Testing of water samples collected from monitoring wells and leachate collection systems is necessary to determine any failures in landfills. The presence of PCBs and chlorinated organics is to be determined; such presence would represent the most acute type of failure that could occur. Specific conductance and pH are indicator parameters than can provide early warning about the migration of polluted or contaminated waters from the landfill site. These tests must be conducted by the owner or operator.

STORING PCBS PRIOR TO DISPOSAL

Most waste PCBs are expected to be stored prior to disposal. The storage may take place at the site where the waste PCBs are generated, a remote site operated by the waste PCB generator, a remote site operated by a transporter or a waste handler, or at a site operated by an incinerator or chemical waste landfill owner or operator. The storage facilities may be used as an accumulation or distribution point for transportation or as a longer term storage facility. Recognizing the need for adequate time to construct or approve new disposal facilities, an initial period of five years will be allowed for storage before disposal must be carried out. Thereafter, any item must be disposed of within one year from the time it is designated for disposal.

Long-term storage raises concerns about deterioration of PCB articles and PCB containers as a result of weather as well as age. Therefore, requirements for storing PCBs are designed to prevent rainwater from reaching the stored items. Container specifications incorporated appropriate Department of Transportation (DOT) specifications. In addition, containers and articles are to be checked at least monthly for leaks, and leaking containers or articles are to be transferred immediately to nonleaking containers meeting the required specifications. Incoming PCB articles and containers are to be dated when they arrive at the storage facility to help insure prompt disposal.

Continuous curbing is required to provide secondary containment of any spilled liquids. The secondary containment approach draws on experience with the Oil Spill Prevention regulations developed by EPA (40 CFR Part 112), but the requirement for PCBs is more rigorous because of the potential environmental impact of PCBs. Additional requirements are provided to insure that no drains, valves, or other devices exist that could circumvent the effectiveness of the containment curbing. The floor and curbing is to be constructed of smooth and impervious Portland cement to minimize the penetration of PCBs into the floor. Insufficient information is available on other floor surfaces that would provide comparable protection to concrete.

Some PCB waste generators will accumulate only small capacitors. If the volume of waste capacitors can be contained within two 55 gallon drums, then minimum storage requirements are considered to be adequate. These minimum requirements consist of using sound, non-leaking drums and storing the drums inside a building. There is little likelihood that the small capacitors will represent a spill threat, and the inside storage will minimize any deterioration from the weather.

If PCBs are spilled in the storage area, it may be possible to contaminate areas outside the storage area by tracking PCBs from the tires of movable equipment such as forklift trucks, unless the surfaces contacted with PCBs are decontaminated. Cleanup methods are not specified in the regulation. However, in general, wiping the affected surfaces with rags or swabs containing a solvent such as kerosene and then disposing of the contaminated rags or swabs as PCB mixtures should be adequate.

DECONTAMINATION PROCEDURES

Decontamination of selected PCB articles and containers may be desirable in order to reuse valuable containers or to reclaim recoverable metals from scrapped articles. The containers specified in the storage requirements are high quality containers that may have a useful life either for containing additional PCB waste or other commodities. Another type of high value container would be railroad tank cars or highway tank trucks used for transporting liquid PCB chemical substances or mixtures. The decontamination procedures described in the regulation for these items are based on techniques successfully used for decontaminating pesticide containers.

PCB transformers appear to be the only PCB articles with a potential salvage value. The internal electrical windings of some transformers, being copper, might be reclaimed if the internal surfaces of the transformer are adequately decontaminated to prevent secondary pollution problems from the PCBs. However, due to limited information on successful decontamination techniques for transformers, no decontamination procedure is specified in the regulation.

REQUIRED MARKINGS

The required markings are designed to contain enough information to alert someone to the presence of PCBs, provide a reference concerning disposal of the PCBs, and provide a reporting point in the event of an accident or spill. Markings must be durable enough to remain easily readable throughout the life of the article or container to which they are affixed. This requirement will probably require that some markings be made of metal and be painted. If technology does not exist for a marking which will survive for thirty or forty years, which is the useful life of many transformers, then the responsible person will be required to replace the markings from time to time.

Items which are newly manufactured or in the manufacturer's inventory and not yet distributed in commerce are required to be marked within six months. PCB containers already in use must be marked within a six-month period in view of the special risks associated with liquid PCBs.

Electric motors using PCBs as a coolant (found primarily in electrically operated mining machinery), pump fittings and lines used in hydraulic systems using PCBs as hydraulic fluids, and pumps, fittings, pipes, and other appurtenances in heat transfer systems using PCBs as a coolant, discharge some PCBs through rotating shaft seals, pump seals, and pipe fittings. These items must also

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be marked within six months to provide a timely warning of possible hazards.

Because of the large number of potential transporters and the need to adequately inform them of the regulation, a nine-month period is provided for placing the large markings on transport vehicles, such as trucks and railcars.

Marking of large low voltage capacitors and high intensity discharge capacitors containing PCBs must be initiated within nine months, but the marking is required only when a servicing operation is taking place which would enable the servicing person to have ready access to the capacitor. Ready access occurs during a servicing operation, independent of the placement of the marking, and as a consequence, the servicing person can perform the marking operation without removing other accessories or articles.

Because of the large number of transformers (140,000) and large high voltage capacitors (6 million) in existence, and their geographical dispersion, the Agency is providing a twelve-month time period for marking these items. The large, high voltage capacitors have special marking requirements because of their locations. When these capacitors are located in electric substations or power generating stations, large banks of capacitors are often used. Placing a marking directly on the capacitor would require shutting off the electrical service in order to avoid hazards to workers. In normal operation, these capacitors are not deenergized for several years unless some emergency occurs. Thus, a marking approach has been proposed which would provide for the placement of a marking on the structure holding the capacitors. For each structure, a record of the location of the capacitors with PCBs would be kept with that particular structure. The vast majority of these capacitors currently use PCBs as a dielectric, but the recordkeeping function will become more important as non-PCB high voltage capacitors are put into service in the future. In order to reduce this special recordkeeping requirement, the option of placing the markings on all of the capacitors on the structure is available. A similar choice is also applicable to power poles containing PCB capacitors so that servicing personnel could place the mark on the pole at eye level, rather than climb the pole to place it or determine which capacitors contain PCBs. Thus, the marking could be read without unnecessary hazard to servicing personnel.

The requirement for marking within six months all unmarked items as they are removed from service or having the item placed immediately into a proper container that is marked should have a minimum impact on industry. Each item will be handled individually during the servicing or removal operation and the placing of a marking on the item should require little additional effort.

REQUIRED RECORDKEEPING AND REPORTS

The regulation contains requirements for recordkeeping for selected PCBs that are projected for eventual disposal. Recordkeeping is also required for owners and operators of facilities used for the disposal and storage of waste PCBs. These reporting and recordkeeping requirements will assist the Agency in determining compliance with the regulation and should also assist owners and operators in maintaining effective inventory control and insuring timely disposal. Public comment on both the impact and usefulness of these recordkeeping requirements are especially invited.

The owners or operators are required to prepare annually documents that summarize key operations in sufficient detail to indicate when specific containers were received, transferred, or disposed of. The weight of containers and transformer contents are required to be recorded in order to assist in performing a mass balance of facility operations.

Operating and monitoring data for incinerators are required to be maintained to facilitate a later review of the adequacy of the destruction process. Chemical waste landfills will retain operating data on burial coordinates and analytical results from test wells and leachate collection systems.

Documents are also to be retained on the various facility approval actions required by the regulation as well as any State or local approval actions. While the document retention requirements are fairly broad in order to insure adequate information is retained, it is not the intent of the regulation to require the retention of obviously trivial information.

Mandatory submission of the annual summaries or other reports is not considered appropriate at this time but it could be required in any approvals granted by Regional Administrators.

SUMMARY OF ECONOMIC CONSEQUENCES

The major economic impact of the proposed regulations will apply to the owners and users of currently operating PCB capacitors and transformers. These persons will be affected by increased costs due to the special marking, disposal, and recordkeeping that will be required. The capital costs associated with compliance are expected to total $9.1 million ($5 million for new incineration capacity, $0.1 million for marking, and $4 million for storage facilities). Annual operating costs are expected to total $56.5 million in 1978 ($5 million for chemical waste landfill charges, $5 million for disposal transportation, $8 million for recordkeeping, $33.3 million for marking, and $4 million for maintaining storage facilities). Total annual operating costs are likely to be approximately $61 million. However, the mix of costs will change after 1978 to $1 million for chemical waste landfill charges, $39 million for incineration charges, $8 million for disposal transportation, $4 million for recordkeeping, $5 million for marking, and $4 million for storage.

The regulations should result in an increase in small business opportunities and employment due to the development of collection and storage services to reduce storage and transportation charges from numerous small generators of PCB wastes.

This notice of proposed Rulemaking is issued under authority of section 6(e) of the Toxic Substances Control Act, 15 U.S.C. section 2605(e).

Dated: May 17, 1977.

DOUGLAS M. COSTLE,
Administrator.

It is proposed to establish a new 40 CFR Part 761 to read as follows:

PART 761—POLYCHLORINATED BIPHENYLS (PCBs)

Subpart A—General

Sec.
761.1 Applicability.
761.2 Definitions.

Subpart B—Disposal of PCBs

761.10 Disposal requirements.

Subpart C—Marking of PCBs

761.20 Marking requirements.

Subpart D—[Reserved]

Subpart E—List of Annexes

ANNEX No. I

761.40 Incineration.

ANNEX No. II

761.41 Chemical waste landfills.

ANNEX No. III

761.42 Storage for disposal.

ANNEX No. IV

761.43 Decontamination.

ANNEX No. V

761.44 Marking formats.

ANNEX No. VI

761.45 Records and monitoring.

AUTHORITY: Sec. 6(e), Toxic Substances Control Act, 15 U.S.C. 2605(e).

Subpart A—General

§ 761.1 Applicability.

(a) This subpart establishes procedures, methods, and other requirements for the disposal, storage, and marking of polychlorinated biphenyls (PCBs).

(b) This subpart applies to all persons who manufacture, process, distribute in commerce, use, or dispose of PCBs, including mixtures and manufactured items which contain PCBs.

(c) The basic requirements of these regulations are set forth in Subpart B—Disposal of PCBs and Subpart C—Marking of PCBs. Subpart E elaborates the requirements which are referred to in the disposal and marking sections. Definitions of words used in all of these sections are found in Subpart A. In particular, § 761.2(p)–(v) of Subpart A define "PCBs" covered by these regulations.

(d) Section 15 of the Toxic Substances Control Act (TSCA) states that failure to comply with these regulations is unlawful. Section 16 imposes liability for civil penalties upon any person who violates these regulations. Section 16 also subjects a person to criminal prosecution for a violation which is knowing or willful.

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§ 761.3 Definitions.

For the purpose of this part:

(a) "Administrator" means the Administrator of the Environmental Protection Agency, or any employee of the Agency to whom the Administrator may either herein or by order delegate his authority to carry out his functions, or any person who shall by operation of law be authorized to carry out such functions.

(b) "Agency" means the United States Environmental Protection Agency.

(c) "Capacitor" means a device for accumulating and holding a charge of electricity, consisting of conducting surfaces separated by a dielectric. Types of capacitors are as follows:

(1) "Small Capacitor" means a capacitor which contains less than 1.36 kg (3 lbs.) of dielectric, except for a capacitor which is defined as an "HID Capacitor."

(2) "HID Capacitor" means a capacitor which contains less than 1.36 kg (3 lbs.) of dielectric and which is used as part of the ballast of a high intensity discharge lighting fixture (e.g., sodium vapor and mercury vapor arc lights).

(3) "Large High Voltage Capacitor" means a capacitor which contains 1.36 kg (3 lbs.) or more of dielectric and which operates at 2000 volts a.c. or above.

(4) "Large Low Voltage Capacitor" means a capacitor which contains 1.36 kg (3 lbs.) or more of dielectric and which operates below 2000 volts a.c.

(d) (1) Except as provided in subparagraph (2) of this paragraph, the term "Chemical Substance" means any organic or inorganic substance of a particular molecular identity, including:

(i) Any combination of such substances occurring in whole or part as a result of a chemical reaction or occurring in nature, and

(ii) Any element or uncombined radical.

(2) Such term does not include:

(i) Any mixture,

(ii) Any pesticide (as defined in the Federal Insecticide, Fungicide, and Rodenticide Act) when manufactured, processed, or distributed in commerce for use as a pesticide,

(iii) Tobacco or any tobacco product,

(iv) Any source material, special nuclear material, or byproduct material (as such terms are defined in the Atomic Energy Act of 1954 and regulations issued under such Act),

(v) Any article the sale of which is subject to the tax imposed by section 4181 of the Internal Revenue Code of 1954 (determined without regard to any exemptions from such tax provided by section 4182 or 4221 or any other provisions of such Code), and

(vi) Any food, food additive, drug, cosmetic, or device (as such terms are defined in section 201 of the Federal Food, Drug, and Cosmetic Act) when manufactured, processed, or distributed in commerce for use as a food, food additive, drug, cosmetic, or device.

(e) "Chemical Waste Landfill" means a landfill at which protection is provided from PCBs deposited therein against risk of injury to health or the environment by locating, engineering, and operating such landfill so as to prevent migration of PCBs to land, water, or the atmosphere.

(f) "Commerce" means trade, traffic, transportation, or other commerce

(1) Between a place in a State and any place outside of such State, or

(2) Which affects trade, traffic, transportation, or commerce described in subparagraph (1) of this paragraph.

(g) "Disposal" means to intentionally or accidentally discard, throw away, or otherwise complete or terminate the useful life of an object or substance. Disposal includes actions related to containing, transporting, destroying, degrading, decontaminating, or confining those substances, mixtures, or articles that are being disposed.

(h) "Distribute in Commerce" and "Distribution in Commerce" when used to describe an action taken with respect to a chemical substance or mixture or article containing a substance or mixture means to sell or to transfer the ownership of the substance, mixture, or article in commerce; to introduce or deliver for introduction into commerce, or the introduction or delivery for introduction into commerce of the substance, mixture, or article; or to hold, or the holding of, the substance, mixture, or article after its introduction into commerce.

(i) "Fluorescent Light Ballast" means a device which electrically controls fluorescent light fixtures and which includes a capacitor containing 0.1 kg or less of dielectric.

(j) "Incinerator" means any installation operated for the incineration of chemical substances, mixtures, or articles.

(k) "Manufacture" means to produce, manufacture, or import into the customs territory of the United States.

(l) "Mark" means the descriptive name, instructions, cautions, or other information applied to chemical substances, mixtures, articles, containers, equipment, or other objects or activities described in these regulations.

(m) "Marked" means the permanent application of a legible mark by painting, fixation of an adhesive label, or other method.

(n) "Mixture" means any combination of two or more chemical substances if the combination does not occur in nature and is not, in whole or in part, the result of a chemical reaction. Such term does include

(1) Any combination which occurs, in whole or in part, as a result of a chemical reaction if none of the chemical substances comprising the combination is a new chemical substance and if the combination could have been manufactured for commercial purposes without a chemical reaction at the time the chemical substances comprising the combination were combined.

(2) Any combination of chemical substances which is the result of solution or hydration; and

(3) Any combination which occurs as a consequence of a reaction which may take place if a chemical substance which functions as a stabilizer, colorant, antioxidant, filler, solvent, carrier, surfactant, or plasticizer is added to another chemical substance and performs as intended.

(o) "Municipal Solid Wastes" means garbage, refuse, sludges, wastes, and other discarded materials resulting from residential and non-industrial operations and activities.

(p) "PCB" and "PCBs" mean one or more of the following: "PCB Chemical Substance", "PCB Mixture", "PCB Article", "PCB Equipment", and "PCB Container."

(q) "PCB Article" means any manufactured item, other than a PCB container, whose surface(s) has been in direct contact with a PCB chemical substance or a PCB mixture, and includes capacitors, transformers, electric motors, pumps, and pipes.

(r) "PCB Article Container" means any package, can, bottle, bag, barrel, drum, tank or other device used to contain PCB articles or PCB equipment, and whose surface(s) has not been in direct contact with a PCB chemical substance or PCB mixture.

(s) "PCB Chemical Substance" means any chemical substance which is limited to the biphenyl molecule which has been chlorinated to varying degrees, and includes substances such as Arochlors.

(t) "PCB Container" means any package, can, bottle, bag, barrel, drum, tank, or other device used to contain a PCB chemical substance, PCB mixture, or PCB article, and whose surface(s) has been in direct contact with a PCB chemical substance or PCB mixture.

(u) "PCB Equipment" means any manufactured item, other than a PCB container or a PCB article container, which contains a PCB article or other PCB equipment, and includes microwave ovens, television sets, and fluorescent light ballasts and fixtures.

(v) "PCB Mixture" means any mixture, except municipal sewage treatment sludge, which contains 0.06 percent (on a dry weight basis) or greater of a PCB chemical substance, and includes dielectrics, contaminated solvents and oils, rags, soil, paints, and debris.

(w) "Person" means any natural or juridical person including any individual, corporation, partnership, or association, any State or political subdivision thereof, any interstate body and any department, agency, or instrumentality of the Federal government.

(x) "Process" means the preparation or use of a chemical substance or mixture, after its manufacture, for distribution in commerce:

(1) In the same form or physical state as, or in a different form or physical state from, that in which it was received by the person so preparing such substance or mixture, or

(2) As part of an article containing the chemical substance or mixture.

(y) "Municipal Sewage Treatment Sludge" means the solid residue result-

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ing from the treatment of municipal sewage.

(z) "Storage for Disposal" means temporary storage of PCBs that have been designated for disposal.

(aa) "Transport Vehicle" means a motor vehicle or rail car used for the transportation of cargo by any mode. Each cargo-carrying body (e.g., trailer, railroad freight car) is a separate transport vehicle.

Subpart B—Disposal of PCBs

§ 761.10 Disposal requirements.

NOTE.—These regulations do not require removal of PCBs from service and disposal earlier than would normally be the case. However, when PCBs are removed from service and disposed of, disposal must be undertaken in accordance with these regulations. Future regulations will be directed to the manufacture, processing, distribution in commerce, and use of PCBs and may result in some cases in disposal at an earlier date than would otherwise occur.

(a) *PCB chemical substances.* (1) A PCB chemical substance shall be disposed of in an incinerator which complies with Annex I.

(2) When storage is desired prior to disposal, a PCB chemical substance shall be stored in a facility which complies with Annex III.

(b) *PCB mixtures.* (1) Except as provided in subparagraphs (2) and (3) of this paragraph, a PCB mixture shall be disposed of in an incinerator which complies with Annex I.

(2) A non-liquid PCB mixture in the form of contaminated soil, sludge, dredge spoil, rags, or other debris shall be disposed of

(i) In an incinerator which complies with Annex I, or

(ii) Until July 1, 1979, in a chemical waste landfill which complies with Annex II.

(3) When storage is desired prior to disposal, a PCB mixture shall be stored in a facility which complies with Annex III.

(c) *PCB Articles*—(1) *PCB Transformers.* A PCB transformer shall be disposed of in accordance with either of the following:

(i) In an incinerator which complies with Annex I, or

(ii) In a chemical waste landfill which complies with Annex II: *Provided*, The transformer is first drained, and flushed internally if necessary, so that no more than two percent of the dielectric liquid volume measured to the fill line remains. PCB chemical substances and PCB mixtures which are removed shall be disposed of in accordance with paragraphs (a) and (b) of this section.

(2) *PCB Capacitors.* (i) The disposal of any capacitor normally used in alternating current circuits shall comply with all requirements of this subpart unless it is known from label information, manufacturer's literature, or chemical analysis that the capacitor does not contain PCB chemical substances of PCB mixtures.

(ii) Any occupant of a private housing unit may dispose of any small PCB capacitors used in the housing unit as municipal solid waste.

(iii) Any other PCB capacitor which is separate from any PCB equipment shall be disposed of in accordance with either of the following:

(a) Disposal in an incinerator which complies with Annex I.

(b) Until July 1, 1979, disposal in a chemical waste landfill which complies with Annex II.

(3) *Other PCB Articles.* Any other PCB articles shall be disposed of in an incinerator which complies with Annex I.

(4) Storage of PCB articles—except for a PCB article described in subparagraph (2) (i) of this paragraph, prior to disposal any PCB article shall be stored in a facility which complies with Annex III.

(d) *PCB Equipment.* (1) Except as provided in subparagraph (2) of this paragraph, PCB equipment shall be disposed of

(i) in an incinerator which complies with Annex I.

(ii) in a chemical waste landfill which complies with Annex II, or

(iii) as municipal solid waste.

(2) Whenever PCB equipment is serviced in a manner which provides direct access to a PCB article such as a capacitor and a decision is made to dispose of the PCB equipment, the PCB article shall be removed from the equipment and disposed of in accordance with paragraph (c) of this section.

NOTE.—Fluorescent light ballasts contain approximately ten (10) percent of all PCBs currently in use and are widely used in commercial and residential buildings. Building owners and operators are urged to establish collection systems for these PCB items and direct the items to incineration facilities or chemical waste landfills that meet the requirements of these regulations.

(e) *PCB Containers.* (1) Unless decontaminated in accordance with Annex IV, a PCB container shall be disposed of

(i) In an incinerator which complies with Annex I, or

(ii) In a chemical waste landfill which complies with Annex II: *Provided*, That the PCB container shall first be drained, and flushed internally if necessary, so that remaining PCB chemical substances and PCB mixtures constitute no more than 0.5 percent of the total volume of the container.

(2) Prior to disposal, a PCB container shall be stored in a facility which complies with Annex III.

(f) *Spills.* (1) Spills and other uncontrolled discharges of PCB chemical substances or PCB mixtures constitute the disposal of PCB chemical substances or PCB mixtures and must comply with this section.

(2) PCB chemical substances and PCB mixtures resulting from spill incidents shall be stored and disposed of in accordance with paragraphs (a) and (b), respectively of this section.

(3) This subsection does not exempt owners or operators responsible for a spill from any actions or liability under other statutory authorities, including section 311 of the Federal Water Pollution Control Act (Pub. L. 92-500) and the Resource Conservation and Recovery Act (94-580).

(g) Municipal solid wastes containing PCBs shall be disposed of as provided in applicable Federal, State, or local laws, regulations, and policies.

(h) A municipal sewage treatment sludge which contains 0.05 percent (on a dry weight basis) or greater PCB chemical substances shall be disposed of:

(1) In an incinerator which complies with Annex I, or

(2) Until July 1, 1979, in a chemical waste landfill which complies with Annex II.

Subpart C—Marking of PCBs

§ 761.20 Marking requirements.

(a) The following marking requirements shall apply:

(1) Each PCB article manufactured after January 1, 1978, shall be marked at the time of manufacture with mark M_1, as described in Annex V—Sec. 761.44 (a).

(2) Each item of PCB equipment manufactured after January 1, 1978, shall be marked at the time of manufacture with mark M_1.

(3) Each PCB container, whether new or existing, shall be marked by January 1, 1978, with mark M_1.

(4) Each PCB article, except small PCB capacitors, contained in PCB equipment in inventory after January 1, 1978, shall be marked before it is distributed in commerce with mark M_1.

(5) Each PCB article container used to contain a PCB article that shall be marked under the provisions of (1) or (4) above shall be marked by January 1, 1978, with mark M_1.

(6) Each storage area used to store PCBs for disposal shall be marked by January 1, 1978, with mark M_1.

(7) Each PCB article when removed from use after January 1, 1978, shall at the time of removal either be marked with mark M_1 or be placed in a PCB container marked with mark M_1, except for PCBs disposed of as municipal solid waste as provided in Sections 761.10 (c) (2), 761.10(d) (1) (e), and 761.10(g).

8. Each of the following PCB articles using PCB chemical substances or PCB mixtures as internal fluids shall be marked by January 1, 1978, with mark M_2:

(A) Electric motors using PCB coolants.

(B) Hydraulic machinery using PCB hydraulic fluid.

(C) Heat transfer systems (other than transformers) using PCB fluids.

(b) In additional to the requirements of paragraph (a) of this section, the following marking requirements shall apply:

(1) Effective March 31, 1978, each transport vehicle loaded with PCB containers with more than 45 kg of PCB chemical substances or PCB mixtures in the liquid phase or with one or more PCB transformers shall be marked with mark M_1.

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(2) Each PCB large low voltage capacitor and each PCB HID capacitor that is in use after March 31, 1978, shall be marked with mark M_L as soon after the date as the capacitor is available for marking because of other servicing of the equipment. A capacitor is available for marking when other servicing operations provide the servicing person direct access to the capacitor.

(c) In addition to the requirements of paragraphs (a) and (b) of this section, the following marketing requirements shall apply:

(1) Each PCB transformer shall be marketed by July 1, 1978, with mark M_L.

(2) Each PCB large high voltage capacitor shall be identified by July 1, 1978, by at least one of the following methods:

(A) Each individual capacitor is to be marked with mark M_L, or

(B) If one or more PCB large high voltage capacitors are installed in a protected location as on a power pole or structure or behind a fence, the pole, structure, or fence is to be marked with mark M_L and a record or procedure identifying the PCB capacitors is to be maintained by the owner or operator at the protected location.

(d) Where mark M_L is specified but the PCB article or PCB equipment is too small to accommodate the smallest permissible size of mark M_L, mark M_S, as described in Annex V—Sec. 761.44(b), may be used instead of Mark M_L.

Subpart D—[Reserved]

Subpart E—List of Annexes

ANNEX I

§ 761.40 Incineration.

(a) *Liquid PCBs.* An incinerator used for incinerating PCB chemical substances or liquid PCB mixtures shall be approved by the Agency Regional Administrator pursuant to paragraph (d) of this section. Such incinerator shall meet all of the requirements specified in subparagraph (1) through (9) of this paragraph, unless a waiver from these requirements is obtained pursuant to paragraph (d) (5) of this section. In addition, the incinerator shall meet any other requirements which may be prescribed pursuant to paragraph (d) (4) of this section.

(1) Combustion criteria shall be either of the following:

(i) Maintenance of the introduced liquids for a 2-second dwell time at 1200°C (±100°C) and 2 percent excess oxygen in the stack gas, or

(ii) Maintenance of the introduced liquids for a 1½ dwell time at 1600°C (±100°C) and 2 percent excess oxygen in the stack gas.

(2) Combustion efficiency shall be at least 99 percent computed as follows:

$$\text{Combustion efficiency} = \frac{Co_2 - Co}{Co_2} \times 100,$$

where

Co_2 = concentration of carbon dioxide.
Co = concentration of carbon monoxide.

(3) The rate and quantity of PCBs which are fed to the combustion system shall be measured and recorded at regular intervals of no longer than 15 minutes.

(4) The temperatures of the incineration process shall be continuously measured and recorded. The combustion temperature of the incineration process shall be based on either direct (pyrometer) or indirect (wall thermocouple-pyrometer correlation) temperature readings.

(5) The flow of PCBs to the incinerator shall stop automatically whenever the combustion temperature drops below the temperatures specified in subparagraph (1) of this paragraph.

(6) Monitoring of stack emission products shall be conducted:

(i) When an incinerator is first used for the disposal of PCBs under the provisions of this regulation, and

(ii) When an incinerator is first used for the disposal of PCBs after the incinerator has been modified in a manner which may affect the characteristics of the stack emission products.

(iii) At a minimum such monitoring shall be conducted for the following parameters: (a) O_2; (b) CO; (c) CO_2; (d) Oxides of Nitrogen (NO$_x$); (e) Hydrochloric Acid (HCl); (f) Total Chlorinated Organic Content (RC); (g) PCB Chemical Substances; (h) Total Particulate Matter.

(7) At a minimum, continuous monitoring and recording of combustion products and incineration operations shall be conducted for the following parameters whenever the incinerator is incinerating PCBs: (i) O_2; (ii) CO_2; (iii) CO_2.

(8) Incinerator operations shall be immediately suspended when any one or more of the following conditions occur:

(i) Failure of monitoring operations specified in subparagraph (7) of this paragraph,

(ii) Failure of the PCB rate and quantity measuring and recording equipment specified in subparagraph (3) of this paragraph, or

(iii) Combustion temperature, dwell time, or excess oxygen fall below those specified in subparagraph (1) of this paragraph.

(9) Water scrubbers shall be used for HCl control during PCB incineration and shall meet any performance requirements specified by the Regional Administrator. Scrubber effluent shall comply with applicable water quality standards, EPA Water Quality Criteria, and any other State and Federal laws and regulations. An alternate method of HCl control may be used if the alternate method has been approved by the Regional Administrator.

(b) *Non-liquid PCBs.* An incinerator used for incinerating non-liquid PCB mixtures, PCB articles, PCB equipment, or PCB containers shall be approved by the Agency Regional Administrator pursuant to paragraph (d) of this section. Such incinerator shall meet all of the requirements specified in subparagraphs (1) through (3) of this paragraph, unless a waiver from these requirements is obtained pursuant to paragraph (d) (5) of this section. In addition, the incinerator shall meet any other requirements which may be prescribed pursuant to paragraph (d) (4) of this section.

(1) The mass air emissions from the incinerator shall be no greater than 0.001g PCB chemical substances/Kg of PCB chemical substance introduced into the incinerator.

(2) Such incinerator shall comply with the provisions of §§ 761.40(a) (3), (5), (6), (7), (8) (i) and (ii) and (9).

(3) The flow of PCBs to the incinerator shall stop automatically whenever the combustion temperature falls below the temperatures specified in any approvals issued by the Regional Administrator pursuant to paragraph (d) of this section. Incinerator operations shall stop immediately whenever the excess oxygen measurements fall below those specified in any approvals issued by the Regional Administrator pursuant to paragraph (d) of this section.

(c) *Maintenance of data and records.* All data and records required by this section shall be maintained in accordance with Annex VI—§ 761.45, Records and Monitoring.

(d) *Approval of incinerators.* Prior to the incineration of PCBs, the owner or operator of an incinerator shall receive the written approval of the Agency Regional Administrator of the Region in which the incinerator is located. Such approval shall be obtained in the following manner:

(1) *Initial report.* The owner or operator shall submit to the Regional Administrator an initial report which contains:

(i) The location of the incinerator.

(ii) A detailed description of the incinerator including general site plans and design drawings of the incinerator.

(iii) Engineering reports or other information on the anticipated performance of the incinerator.

(iv) Sampling and monitoring equipment and facilities available.

(v) Waste volumes expected to be incinerated.

(vi) Any local, State, or Federal permits or approvals.

(vii) Schedules and plans for complying with the approved requirements of this regulation.

(2) *Trial burn.* (i) Following receipt of the report described in subparagraph (1) of this paragraph, the Regional Administrator shall notify the person who submitted the report whether a trial burn of PCBs must be conducted. The Regional Administrator may require the person who submitted the report described in subparagraph (1) of this paragraph to submit such other information as the Regional Administrator finds to be reasonably necessary to determine the need for a trial burn.

(ii) If the Regional Administrator determines that a trial burn must be held,

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the person who submitted the report described in subparagraph (1) of this paragraph shall submit to the Regional Administrator a detailed plan for conducting and monitoring the trial burn. At a minimum, the plan must include:

(a) Date trial burn is to be conducted.

(b) Quantity and type of PCBs to be incinerated.

(c) Parameters to be monitored and location of sampling points.

(d) Sampling frequency and methods and schedules for sample analyses.

(e) Name, address, and qualifications of persons who will review analytical results and other pertinent data and who will perform a technical evaluation of the effectiveness of the trial burn.

(iii) Following receipt of the plan described in subdivision (ii) of this subparagraph, the Regional Administrator will approve the plan, require additions or modifications to the plan, or disapprove the plan. If the plan is disapproved, the Regional Administrator will notify the person who submitted the plan of such disapproval, together with the reasons why it was disapproved. That person may thereafter submit a new plan in accordance with subdivision (ii) of this subparagraph. If the plan is approved (with any additions or modifications which the Regional Administrator may prescribe), the Regional Administrator will notify the person who submitted the plan of such approval. Thereafter the trial burn shall take place at a date and time to be agreed upon between the Regional Administrator and the person who submitted the plan.

(3) *Other information.* In addition to the information contained in the report and plan described in subparagraphs (1) and (2) of this paragraph, the Regional Administrator may require the owner or operator to submit such other information as the Regional Administrator finds to be reasonably necessary to determine whether an incinerator shall be approved.

NOTE.—The Regional Administrator will have available for review and inspection an Agency manual containing information or sampling methods and analytical procedures for the parameters required in § 761.40(a)(3), (4), (5), and (7) plus any other parameters he may determine to be appropriate. Owners or operators are encouraged to review this manual prior to submitting any report required in this Annex.

(4) *Contents of Approval.* (i) Except as provided in subparagraph (5) of this paragraph, the Regional Administrator may not approve an incinerator for the disposal of PCBs unless he finds that the incinerator meets all of the requirements of paragraphs (a) and/or (b) of this section, whichever is applicable.

(ii) In addition to the requirements of paragraphs (a) and/or (b) of this section, the Regional Administrator may include in an approval such other requirements as the Regional Administrator finds are necessary to ensure that operation of the incinerator does not present an unreasonable risk of injury to health or the environment from PCBs. Such requirements may include a fixed period of time for which the approval is valid.

(5) *Waivers.* An owner or operator of the incinerator may submit evidence to the Regional Administrator that operation of the incinerator will not present an unreasonable risk of injury to health or the environment from PCBs, when one or more of the requirements of paragraphs (a) and/or (b) of this section are not met. On the basis of such evidence and any other available information, the Regional Administrator may in his discretion find that any such requirements are not necessary to protect against such risk and may waive such requirements in any approval for that incinerator. Any such finding and waiver must be stated in writing and included as part of the approval.

(6) *Persons Approved.* An approval will designate the persons who own and who are authorized to operate the incinerator, and will apply only to such persons.

(7) *Final Approval.* Approval of an incinerator will be in writing and signed by the Regional Administrator. The approval will state all requirements applicable to that incinerator.

ANNEX II

§ 761.41 Chemical waste landfills.

(a) *General.* A chemical waste landfill used for the disposal of PCBs shall be approved by the Agency Regional Administrator pursuant to paragraph (c) of this section. Such landfill shall meet all of the requirements specified in paragraph (b) of this section, unless a waiver from these requirements is obtained pursuant to paragraph (c) (4) of this section. In addition, the landfill shall meet any other requirements which may be prescribed pursuant to paragraph (c) (3) of this section.

(b) *Technical requirements.* Requirements for chemical waste landfills used for the disposal of PCBs are as follows:

(1) *Soils.* The landfill site shall be located in thick, relatively impermeable formations such as large-area clay pans. Where this is not possible, the soil shall have a high clay and silt content with the following parameters:

(i) In-place soil thickness, 4', or compacted soil liner thickness, 3'.

(ii) Permeability (cm/sec), $\leq 1 \times 10^{-7}$.

(iii) Percent soil passing No. 200 Sieve, ≥30.

(iv) Liquid Limit, ≥30.

(v) Plasticity Index, ≥15.

(vi) Artificial Liner Thickness, ≥30 mil.

NOTE.—In the event that an artificial liner is used at a landfill site, special precautions shall be taken to insure that its integrity is maintained and that it is chemically compatible with PCBs. Soil underlining shall be provided as well as a soil cover.

(2) *Hydrology.* The bottom of the landfill shall be substantially above the historical high groundwater table. Floodplains, shorelands, and groundwater recharge areas shall be avoided. There shall be no hydraulic connection between the site and standing or flowing surface water. The site shall have monitoring wells and leachate collection and shall be at least fifty feet from the nearest groundwater.

(3) *Flood protection.* (i) If the landfill site is below the 100-year floodwater elevation, the operator shall provide surface water diversion dikes around the perimeter of the landfill site with a minimum height equal to two feet above the 100-year floodwater elevation.

(ii) If the landfill site is above the 100-year floodwater elevation, the operators shall provide diversion structures capable of diverting all of the surface water runoff from a 24-hour, 25-year storm.

(4) *Topography.* The landfill site shall be located in an area of low to moderate relief to minimize erosion and to help prevent landslides or slumping.

(5) *Monitoring Systems.*—(i) *Water Sampling.* (a) The ground and surface water from the disposal site area shall be sampled for use as baseline operations.

(b) Defined water sources shall be sampled at least monthly when the landfill is being used for disposal operations.

(c) Defined water sources shall be sampled indefinitely on a frequency of no less than once every six months after final closure of the disposal area.

(ii) *Groundwater Monitor Wells.* (a) If underlying earth materials are homogeneous, impermeable, and uniformly sloping in one direction, only three sampling points shall be necessary. These three points shall be equally spaced on a line through the center of the disposal area and extending from the area of highest water table elevation to the area of the lowest water table elevation on the property.

(b) All monitor wells shall be cased and the annular space between the monitor zone (zone of saturation) and the surface shall be completely backfilled or plugged with Portland cement to effectively prevent percolation of surface water into the well bore. The well opening at the surface shall have a removable cap to provide access and to prevent entrance of rainfall or stormwater runoff. The well shall be pumped to remove the volume of liquid initially contained in the well before obtaining a sample for analysis. The discharge shall be treated to meet applicable State of Federal discharge standards or recycled to the chemical waste landfill.

(iii) *Water analysis.* As a minimum, all samples shall be analyzed for the following parameters, and all data and records of the sampling and analysis shall be maintained as required in Annex VI. Sampling methods and analytical procedures for these parameters shall be as specified in 40 CFR Part 136 as amended in 41 FR 52779 of December 1, 1976.

(a) PCBs.

(b) pH.

(c) Specific Conductance.

(d) Chlorinated Organics.

(6) *Leachate Collection.* A leachate collection monitoring system shall be installed beneath the chemical waste landfill. Leachate collection systems shall be monitored monthly for quantity and quality of leachate produced. The leachate should be either treated to acceptable limits for discharge in accordance with a State or Federal permit or disposed of by another State or Federal ap-

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proved method. Water analysis shall be as provided in subparagraph (5) (iii) of this paragraph. Acceptable leachate collection monitoring/collection systems shall be one of the following designs unless a waiver is obtained pursuant to paragraph (c) (4) of this section.

(i) *Simple Leachate Collection.* This system consists of a gravity flow drainfield installed under the waste disposal facility liner. This design is recommended for use when semi-solid or leachable solid wastes are placed in a lined pit excavated into a relatively thick, unsaturated, homogeneous layer of low permeability soil.

(ii) *Compound Leachate Collection.* This system consists of a gravity flow drainfield installed under the waste disposal facility liner and above a secondary installed liner. This design is recommended for use when semiliquid or leachable solid wastes are placed in a lined pit excavated into relatively permeable soil.

(iii) *Suction Manometers.* This system consists of a network of porous "stones" connected by hoses/tubing to a vacuum pump. The porous "stones" or suction manometers are installed along the sides and under the bottom of the waste disposal facility liner. This type of system works best when installed in relatively permeable unsaturated soil immediately adjacent to the disposal facility's bottom and/or sides.

(7) *Chemical Waste Landfill Operations.* (i) PCBs shall be placed in the landfill in a manner that will prevent damage to containers or articles. Other wastes placed in the landfill that are not chemically compatible with PCBs or PCB containers shall be segregated from the PCBs throughout the waste handling and disposal process.

(ii) An operations plan shall be developed and submitted to the Regional Administrator for approval as required in paragraph (c) of this section. This plan shall include detailed explanations of the procedures to be used for recordkeeping, excavation and backfilling, waste segregation, burial coordinates, vehicle and equipment movement, use of roadways, leachate collection systems, sampling and monitoring procedures, monitoring wells, and security measures to protect against vandalism and unauthorized waste placements. EPA guidelines entitled "Thermal Processing and Land Disposal of Solid Waste" (39 FR 29337 of August 14, 1974) are a useful reference in preparation of this plan.

(iii) Records shall be maintained for all PCB disposal operations and shall include the three dimensional burial coordinates for PCBs. Additional records shall be developed and maintained as provided in Annex VI.

(8) *Supporting Facilities.* (i) A six foot woven mesh fence, wall, or similar device shall be provided around the site to prevent unauthorized persons and animals from entering.

(ii) Roads shall be maintained to and on the site which are adequate to operate and maintain the site without causing safety or nuisance problems or hazardous conditions.

(iii) The site shall be operated and maintained in a manner to prevent safety problems or hazardous conditions resulting from spilled liquids and windblown materials.

(c) *Approval of chemical waste landfills.* Prior to the disposal of any PCBs in a chemical waste landfill, the owner or operator of the landfill shall receive written approval of the Agency Regional Administrator of the Region in which the landfill is located. Such approval shall be obtained in the following manner:

(1) *Initial Report.* The owner or operator shall submit to the Regional Administrator an initial report which contains:

(i) The location of the landfill.

(ii) A detailed description of the landfill including general site plans and design drawings.

(iii) An engineering report describing the manner in which the landfill complies with the requirements for chemical waste landfills in paragraph (b) of this section.

(iv) Sampling and monitoring equipment and facilities available.

(v) Expected waste volumes of PCBs.

(vi) General description of waste materials other than PCBs that are expected to be disposed of in the landfill.

(vii) Landfill operations plan as required in paragraph (b) of this section.

(viii) Any local, State, or Federal permits or approvals.

(ix) Any schedules or plans for complying with the approval requirements of these regulations.

(2) *Other Information.* In addition to the information contained in the report described in subparagraph (1) of this section, the Regional Administrator may require the owner or operator to submit such other information as the Regional Administrator finds to be reasonably necessary to determine whether a chemical waste landfill should be approved.

(3) *Contents of approval.* (i) Except as provided in subparagraph (4) of this paragraph, the Regional Administrator may not approve a chemical waste landfill for the disposal of PCBs unless he finds that the landfill meets all of the requirements of subparagraph (6) of this paragraph.

(ii) In addition to the requirements of paragraph (b) of this section, the Regional Administrator may include in an approval such other requirements as the Regional Administrator finds are necessary to ensure that operation of the chemical waste landfill does not present an unreasonable risk of injury to health or the environment from PCBs. Such requirements may include a fixed period of time for which the approval is valid.

(4) *Waivers.* An owner or operator of a chemical waste landfill may submit evidence to the Regional Administrator that operation of the landfill will not present an unreasonable risk of injury to health or the environment from PCBs, when one or more of the requirements of paragraph (b) of this section are not met. On the basis of such evidence and any other available information, the Regional Administrator may in his discretion find that any such requirements are not necessary to protect against such risk and may waive such requirements in any approval for that landfill. Such finding and waiver will be stated in writing and included as part of the approval.

(5) *Persons Approved.* Any approval will designate the persons who own and who are authorized to operate the chemical waste landfill, and will apply only to such persons.

(6) *Final Approval.* Approval of a chemical waste landfill will be in writing and will be signed by the Regional Administrator. The approval will state all requirements applicable to that landfill.

ANNEX III

§ 761.42 Storage for disposal.

(a) Any PCB article or PCB container stored for disposal before July 1, 1981, shall be removed from storage and disposed of before July 1, 1982. Any PCB article or PCB container stored for disposal after July 1, 1981, shall be removed from storage and disposed of within one year from the date when it was first placed into storage.

(b) Except as provided in paragraph (c) of this section, after October 1, 1977, owners or operators of any facilities used for the storage of PCBs designated for disposal shall comply with the following requirements:

(1) Such facilities shall have:

(i) An adequate roof to prevent rainwater from reaching the stored PCBs.

(ii) An adequate floor which has continuous curbing with a minimum six inch high curb. Such floor and curbing must provide a containment volume equal to at least two times the internal volume of the largest PCB equipment or PCB container stored therein or twenty-five percent of the total internal volume of all PCB equipment or containers stored therein, whichever is greater.

(iii) No drain valves, floor drains, sewer lines, or other openings that would permit liquids to flow from the curbed area.

(iv) Continuous, smooth, and impervious construction for floors and curbing such as Portland cement concrete.

(c) (1) After October 1, 1977, if the only PCBs stored at a particular facility are small capacitors which have an aggregate storage volume of not greater than two 55-gallon drums, the only storage requirement is to store such capacitors in sound, non-leaking containers within a building.

(2) The storage area shall be marked as required in Subpart C—§761.30(a) (6).

(3) No items of movable equipment used for handling PCBs in the storage facilities shall be removed from the areas unless decontaminated.

(4) All PCB containers shall be checked for leaks at least once every 30 days. All leaking containers and their contents shall be transferred immediately to properly marked nonleaking containers. Any spilled or leaked mate-

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rials shall be immediately cleaned up using sorbents or other adequate means, and the cleaned materials and residues shall be disposed of in accordance with Subpart B—§ 761.10(b).

(5) Any PCB container used for the storage of liquid PCB chemical substances or liquid PCB mixtures shall comply with the specifications of the Department of Transportation Materials Transportation Bureau Hazardous Materials Regulations, 49 CFR 173.346 (41 FR 42544, September 27, 1976). Any PCB container used for the storage of nonliquid PCB mixtures, PCB articles, or PCB equipment may vary from 49 CFR 173.346 by meeting DOT Spec. 6, Spec. 6B, or Spec. 17C with removable heads.

(6) PCB articles and PCB containers shall be dated when they are placed in storage. The storage shall be managed so that the PCB articles and PCB containers can be located by the date they entered storage.

(7) Owners or operators of storage facilities shall establish and maintain records as provided in Annex VI.

ANNEX IV

§ 761.43 Decontamination.

(a) Any PCB container to be decontaminated shall be decontaminated by flushing of the internal surfaces of the container three times with a solvent containing less than 0.05 percent PCB chemical substance in which the solubility of PCBs is five percent or more by weight. Each rinse shall use a volume of the normal diluent equal to approximately ten percent of the PCB container's capacity. The solvent may be reused for decontamination until it contains 0.5 percent PCB chemical substance. The solvent shall then be disposed of as a PCB mixture, in accordance with § 761.10(b).

(b) Movable equipment used in storage areas shall be decontaminated by swabbing surfaces that have contacted PCB chemical substances or PCB mixtures with a solvent meeting the criteria of paragraph (a) of this section.

ANNEX V

§ 761.44 Marking formats.

The following formats shall be used for marking:

(a) Large PCB Mark—M_L—Mark M_L shall be as shown in Figure 1, with black letters and striping on a white background and shall be sufficiently durable to equal or exceed the life (including storage for disposal) of the equipment or container. The size of the mark shall be at least 15.25 cm (6 inches) on each side. If the PCB equipment is too small to accommodate this size, the mark may be reduced in size proportionately down to a minimum of 5 cm (2 inches) on each side.

(b) Small PCB Mark—M_S—Mark M_S shall be as shown in Figure 2, with black letters and striping on a white background, and shall be sufficiently durable to equal or exceed the life (including storage for disposal) of the equipment or container. The mark shall be a rectangle 2.5 by 5 cm (1 inch by 2 inches). If the PCB equipment is too small to accommodate this size, the mark may be reduced in size proportionately down to a minimum of 1 by 2 cm (.4 by .8 inches).

CAUTION

CONTAINS

PCBs

(Polychlorinated Biphenyls)

A toxic environmental contaminant requiring special handling and disposal in accordance with U.S.Environmental Protection Agency Regulations - 40 CFR 761 for Disposal Information contact the nearest U.S. E.P.A. Office.

In case of accident or spill, call toll free the U.S.Coast Guard National Response Center: 800:424-8802

CAUTION—CONTAINS
PCBs
FOR PROPER DISPOSAL
INFORMATION CONTACT
U.S. ENVIRONMENTAL
PROTECTION AGENCY

ANNEX VI

§ 761.45 Records and monitoring.

(a) *PCBs in service or projected for disposal.* By January 1, 1978, each owner or operator of a facility containing forty-five kilograms of PCB chemical substances or PCB mixtures in the liquid phase or fifty or more PCB large high voltage capacitors shall develop and maintain records on the location and disposition of the PCBs. These records shall form the basis of an annual document prepared for each facility by March 1 covering the previous calendar year. Owners or operators with more than one facility which contain PCBs may maintain the records and documents at a single location, provided the identity of this location is available at each facility containing PCBs that is normally manned for eight hours a day. The records and documents shall be maintained for at least five years after the facility ceases containing PCBs at the prescribed quantities. The following information for each facility shall be included in the annual document:

(1) The dates when PCBs are removed from service, are placed into storage for disposal, and are placed into transport for disposal. The quantities of such PCBs shall be indicated using the following breakdown:

(i) Total weight in kilograms of any PCB chemical substances or PCB mixtures in PCB containers, including the identification of container contents, such as liquids, and capacitors.

(ii) Total number of PCB transformers and total weight in kilograms of any PCB chemical substances and PCB mixtures contained in the transformers.

(iii) Total number of PCB large high voltage capacitors.

(2) For PCBs removed from service, the location of the initial disposal or

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storage facility and the name of the owner or operator of the facility.

(3) Total quantities of PCBs remaining in service at the end of the calendar year using the following breakdown:

(i) Total weight in kilograms of any PCB chemical substances and PCB mixtures in PCB containers, including the identification of container contents such as liquids and capacitors.

(ii) Total number of PCB transformers and total weight in kilograms of any PCB chemical substances and PCB mixtures contained in the transformers;

(ii) Total number of PCB large high voltage capacitors.

(b) *Disposal and storage facilities.* Beginning in 1979, each owner or operator of a facility used for the storage or disposal of PCBs shall by March 1 of each year prepare and maintain a document which specifies the manner in which PCBs were handled at the facility during the previous calendar year. Such document shall be retained at each facility for at least five years after the facility is no longer used for the storage or disposal of PCBs, except that in the case of chemical waste landfills such documents shall be maintained at least twenty years after the chemical waste landfill is no longer used for the disposal of PCBs. Such documents shall be available at the facility for inspection by authorized representatives of the Environmental Protection Agency. If the facility ceases to be used for PCB storage or disposal, the owner or operator of such facility shall promptly notify the Agency Regional Administrator of the region in which the facility is located that the facility has ceased storage or disposal operations and shall specify where the documents required to be maintained by this paragraph shall be located. The following information shall be included in each document:

(1) The date when any PCBs are received by the facility during the previous calendar year for storage or disposal, and the identification of the person and facility from whom such PCBs were received.

(2) The date when any PCBs are disposed of at the disposal facility or transferred to another disposal or storage facility, including the identification of the specific types of PCB chemical substances, PCB mixtures, or PCB articles in containers; PCB transformers; and PCB equipment or PCB articles not in containers which were stored or disposed of.

(3) Total weight in kilograms of any PCB containers and the total weight in kilograms of any PCB chemical substances or PCB mixtures contained in any PCB transformers, received during the calendar year, transferred to other storage or disposal facilities during the calendar year, and remaining on the disposal or storage facility site at the end of the calendar year, respectively, including, where applicable, the identification of PCB container contents such as liquids, capacitors, etc. When PCB containers or PCB chemical substances or PCB mixtures contained in a transformer are transferred to other storage or disposal facilities, the identification of the facility to which such PCBs were transferred shall be included.

(4) Total number of any PCB articles or PCB equipment, not in PCB containers, received during the calendar year, transferred to other storage or disposal facilities during the calendar year, and remaining on the facility site at the end of the calendar year, respectively, including the identification of the specific types of PCB articles and PCB equipment received, transferred, or remaining on the facility site. When PCB articles and PCB equipment are transferred to other storage or disposal facilities, the identification of the facility to which such PCB articles and PCB equipment were transferred must be included.

NOTE: Any requirements for weights in kilograms of PCBs may be calculated values if the internal volume of containers and transformers is known and included in the reports, together with any assumptions on the density of the PCB chemical substances or PCB mixtures contained in the containers or transformers.

(c) *Incineration facilities.* For each owner or operator of a PCB incinerator facility, the following information is required in addition to the information required in paragraph (b) of this section:

(1) When PCBs are being incinerated, the following continuous and short-interval data shall be collected and maintained for a period of five years from the date of collection:

(A) Rate and quantity of PCBs fed to the combustion system, as provided in Annex I—§ 761.40(a)(3).

(B) Temperature of the combustion process, as provided in Annex I—§ 761.40(a)(6).

(C) Stack emission products to include O_2, CO, and CO_2, as provided in Annex I—§ 761.40(a)(7).

(2) When PCBs are being incinerated, data and records resulting from the monitoring of stack emissions as required in Annex I—§ 761.40(d)(2), shall be collected and maintained for five years.

(3) Total weight in kilograms of any solid residues generated by the incineration of PCBs during the calendar year, the total weight in kilograms of any solid residues disposed of by such facility in chemical waste landfills, and the total weight in kilograms of any solid residues remaining on the facility site shall be retained for five years.

(4) When PCBs are being incinerated, additional periodic data shall be collected and maintained as specified by the Regional Administrator pursuant to Annex I—§ 761.40(d)(4).

(5) A document shall be prepared on any suspension of the operation of any incinerator by the owner or operator thereof, as required in Annex I—§ 761.40(a)(8). The document shall, at a minimum, include the date and time of the suspension and an explanation of the circumstances causing the suspension of operation.

(d) Retention of Special Records by Storage and Disposal Facilities. In addition to the information required to be maintained by pragraphs (b) and (c) of this section, each owner or operator of a PCB storage or disposal facility shall collect and maintain for the time period required in paragraph (c) of this section the following data:

(1) All documents, correspondence, and data provided to the owner or operator by any State or local government agency that pertain to the storage or disposal of PCBs at such facility.

(2) All documents, correspondence, and data provided by the owner or operator of such facility to any State or local government agency that pertain to the storage or disposal of PCBs at such facility.

(3) Any applications and related correspondence sent by the owner or operator of such facility to any local, State, or Federal authorities in regard to wastewater discharge permits, solid waste permits, building permits, or other permits or authorizations, such as those required by Annex I—§ 761.40(d) and Annex II—§ 61.41(e).

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