[6560-01]

ENVIRONMENTAL PROTECTION AGENCY

[FRL 886-6]

[40 CFR Part 761]

POLYCHLORINATED BIPHENYLS (PCB's)

Manufacturing, Processing, Distribution in Commerce, and Use Bans

AGENCY: Environmental Protection Agency.

ACTION: Proposed rule; notice of informal hearing.

SUMMARY: This proposed rule is designed to implement provisions of the Toxic Substances Control Act (TSCA) prohibiting the manufacture, processing, distribution in commerce, and use of polychlorinated biphenyls (PCB's), and to provide several limited exceptions to these general prohibitions for activities which will not present an unreasonable risk of injury to health or the environment.

DATES: Written comments preferably in triplicate must be received prior to the close of business August 7, 1978. Hearing date and time: August 21, 1978 at 10 a.m. Requests to participate in the hearing must be received prior to close of business on July 31, 1978. For persons meeting certain requirements, compensation for participation in these proceedings is available. See Supplementary Information below.

ADDRESSES: Send comments to: Office of Toxic Substances (TS-794), Environmental Protection Agency, 401 M Street SW., Washington, D.C. 20460, Attention: Joni T. Repasch. Hearing will be held at EPA Headquarters, Room 2117 (address above). Address requests to participate to Joni T. Repasch (address above).

FOR FURTHER INFORMATION CONTACT:

Peter P. Principe, Office of Toxic Substances (TS-794), Environmental Protection Agency, 401 M Street SW., Washington, D.C. 20460, 202-755-0920.

SUPPLEMENTARY INFORMATION: The Environmental Protection Agency proposes this rule pursuant to the authority of § 6(e) of the Toxic Substances Control Act (Pub. L. 94-469; 90 Stat. 2003; 15 U.S.C. 260i et seq., hereinafter referred to as TSCA). The procedures for rulemaking under § 6 of TSCA (40 CFR Part 750), 42 FR 61269 (December 2, 1977), will be followed. The official record of rulemaking is located in Room 520, East Tower, Environmental Protection Agency, 401 M Street SW., Washington, D.C. 20460, 202-755-1188. It will be available for viewing and copying from 9 a.m. to 4 p.m., Monday through Friday, excluding holidays. Hearing transcripts and other hearing materials will be added to the record as they become available.

Compensation for participation. For persons meeting certain requirements, compensation for participation in these proceedings is available. EPA's temporary rule regarding compensation can be found in 42 FR 60911, November 30, 1977. Copies of this rule are available from the Industry Assistance Office, Office of Toxic Substances (TS-793), Environmental Protection Agency, Washington, D.C. 20460. Copies may also be requested by calling EPA's toll free number, 800-424-9065 (in Washington, D.C., 554-1404). Persons who have questions about this program (other than requests for copies of the rule) may call or write William F. Pedersen, Jr., Office of Generald Counsel (A-130), Environmental Protection Agency, Washington, D.C. 20460, 202-426-0508.

A Support Document/Voluntary Draft Environmental Impact Statement contains background information on PCB's, information on the risks which PCB's present to health and the environment, analyses of the economic impact of the rule, support for the regulatory actions proposed, discussion of the alternatives considered, and the list of documents contained in the official record of rulemaking. This Support Document can be obtained from the Indutry Assistance Office, Office of Toxic Substances (TS-793), Environmental Protection Agency, 401 M Street SW., Washington, D.C. 20460, 800-424-9065 (in Washington, D.C., 554-1404).

EPA held meetings July 15, 1977, in Washington, D.C., and July 19, 1977, in Chicago. The public was invited to provide information and comment relevant to this rulemaking. A notice of these meetings, including a discussion of some issues for consideration, was published in the FEDERAL REGISTER on June 27, 1977 (42 FR 32555).

I. SUMMARY OF APPLICABLE PROVISIONS OF TSCA

Section 6(e)(2) of TSCA bans the manufacture, processing, distribution in commerce, and use of PCB's in any manner which is not a "totally enclosed manner" after January 1, 1978. The term "totally enclosed manner" is defined in section 6(e)(2)(C) as "any manner which will ensure that any exposure of human beings or the environment to a polychlorinated biphenyl will be insignificant as determined by the Administrator by rule." The Administrator therefore must decide what constitutes an insignificant exposure to PCB's so that he can distinguish between totally enclosed and nontotally enclosed activities. The Administrator may authorize nontotally enclosed manufacturing, processing, distribution in commerce or use if he finds that it will not present an unreasonable risk of injury to health or the environment (sec. 6(e)(2)(B)). If he makes such a finding, the Administrator may authorize the activity to continue until January 1, 1979, for manufacturing, or until July 1, 1979, for processing and distribution in commerce. A nontotally enclosed use may be authorized for whatever period the Administrator finds appropriate.

Section 6(e)(3) of TSCA bans any manufacture of PCB's after January 1, 1979, and any processing and distribution in commerce of PCB's after July 1, 1979, even if authorizations for these activities had been previously promulgated. However, the ban on distribution in commerce does not apply to PCB's sold before July 1, 1979, for purposes other than resale. Upon petition, the Administrator may grant exemptions which would allow specific activities otherwise banned by section 6(e)(3) to continue if he finds, in each case, that there will not be an unreasonable risk associated with continuing the activity and that good faith efforts have been made to develop a substitute for PCB which itself does not present an unreasonable risk. These exemptions an be granted for only one year at a time and may be conditioned by requirements the Administrator finds necessary.

The term "authorization" is used throughout this rulemaking whenever reference is made to exceptions to the "totally enclosed manner" requirements (section 6(e)(2)), while the term "exemption" is used only in reference to exceptions to the 1979 bans (section 6(e)(3)). These are the terms used in TSCA, and their use here reflects the statutory differences between these two types of exceptions.

Section 3(7) of TSCA defines "manufacture" to include importation. Thus, nontotally enclosed importation is banned after the effective date of this regulation, unless authorized by EPA, and any importation is banned after January 1, 1979, unless EPA grants an exemption.

Section 12(a)(1) of TSCA states that if a substance, mixture, or article is manufactured, processed, or distributed in commerce for export, and is so labeled, it is not subject to other sections of TSCA unless the Administrator finds that it "will present an unreasonable risk of injury to health within the United States or to the environment of the United States." In other words, in the absence of such a finding by the Administrator under section 12(a)(2), PCB's could be manufactured, processed, or distributed in commerce for export. However, a finding of unreasonable risk has been made by the Administrator so that the manufacture, processing, and distribution in commerce of PCB's for export will be prohibited (see Section VII of this Preamble).

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II. Relation of the Proposed Ban Rule to the Disposal and Marking Rule

This proposed rule is the second issued under section 6(e) of TSCA. Section 6(e)(1) requires EPA to promulgate rules governing the disposal and arking of PCB's. This rule was published on February 17, 1978 (43 FR 7150), as Part 761 of Title 40 of the Code of Federal Regulations. This proposed ban rule would implement section 6(e)(2) and section 6(e)(3) of TSCA. When promulgated, this rule will be added to Part 761. An effort has been made to avoid needless repetition of provisions of the Disposal and Marking rule. Definitions used in this proposal that have already been promulgated are not repeated here. Where a change in the Disposal and Marking rule is proposed, the entire paragraph affected by this change appears here. The changes to the Disposal and Marking requirements reflect the proposed change to the definition of "PCB Mixture" which, if adopted, would extend these requirements to certain materials not currently covered. A notice containing corrections and clarifications of the final PCB Disposal and Marking rule will be published in the Federal Register shortly.

III. Summary of the Rule

This section provides an overview of the arrangement and contents of the rule. Individual parts of the rule are discussed in more detail in section IV of this Preamble.

§ 761.1—Applicability. This section reflects the proposed addition of the section 6 (e)(2) and (e)(3) prohibitions to Part 761. The only substantial change proposed in this section from the present regulation is the exclusion of the manufacture, processing, distribution in commerce, and use of small quantities of PCBs for research and development from the requirements and prohibitions contained in § 761.30.

§ 761.2—Definitions. The existing definitions of "PCB(s)" and "PCB Mixture" have been modified. EPA proposes to decrease the lower limit of the definition of a "PCB Mixture" from 500 ppm to 50 ppm PCB and to add the term "PCB Sealant, Coating, or Dust Control Agent" (which is a newly defined term) to the existing definition of "PCB(s)". Nine new definitions have been added.

§ 761.10—Disposal requirements. In response to the proposed change in the definition of PCB misture, a method is proposed for the disposal of transformers that contain dielectric fluid with less than 500 ppm but greater than or equal to, 50 ppm PCB.

§ 761.20—Marking requirements. PCB transformers in which the dielectric fluid contains less than 500 ppm are not required to be marked.

§ 761.30—Prohibitions. This section restates the manufacturing, processing, distribution in commerce, and use bans contained in § 6(e) as described above. It also includes the Administrator's findings that: (1) the manufacture, processing, and distribution in commerce for export of PCB's pose an unreasonable risk; and (2) that the distribution in commerce and use of certain transformers and capacitors is totally enclosed.

§ 761.31—Authorizations. The following authorizations for continuation of nontotally enclosed activities are proposed: servicing of transformers, processing and distribution in commerce of PCB dielectric fluid for transformer servicing, use of railroad transformers, use of mining machinery, processing and distribution in commerce of PCB fluid for rebuilding continuous miner motors, use of hydraulic die casting systems and use of PCB carbonless copy paper (See Figure 1.). The term "Transformer" refers to transformers not used on railroad locomotives and self-propelled cars. transformers used on locomotives and self-propelled cars are referred to as "Railroad Transformers." The use authorizations expired five years after the effective date of the rule. The need for some authorizations will have ended by that time and others may require modification to reflect new circumstances. At that time, EPA will reevaluate the need for the authorizations.

Figure 1

Summary of Proposed Authorizations

Authorization and Expiration Date

a. Transformers-Use (Servicing),[1] 5 years after the effective date of the rule.

b. Transformer Dielectric Fluid-Processing and Distribution in Commerce,[1] July 1, 1979; yearly exemption required thereafter.

c. Railroad Transformer-Use,[1] 5 years after the effective date of the rule.

d. Mining Equipment-Use,[1] December 31, 1981, for both continuous miners and loaders except that 12 months after the effective date of the rule there can be no rebuilding of miner motors.

e. Mining Equipment-Processing and Distribution in Commerce,[1] July 1, 1979; yearly exemption required thereafter.

f. Hydraulic Die Casting System-Use, 5 years after the effective date of the rule.

g. Carbonless Copy Paper-Use, 5 years after the effective date of the rule.

Since intact, nonleaking transformers and capacitors are considered totally enclosed, authorizations are not needed for the distribution in commerce and use (except servicing) of intact, nonleaking transformers (except those used on railroad locomotives and self-propelled cars) and intact, nonleaking capacitors.

[1] These authorizations permit non-totally enclosed servicing. However, companies who service articles owned by others must meet the exemption requirements explained in section IV-F of this Preamble.

Annex VII

§ 761.46—Contingency Plans for PCB Exposures and Spills. This section proposes requirements for the content, availability, and use of a contingency plan for the prevention and control of PCB exposures and spills. Plans would be required for those activities which are granted authorizations.

IV. Discussion of the Proposed Rule

A. Applicability

The proposed rule would apply to any person who manufactures, processes, distributes in commerce, or uses PCB's. The term "PCB(s)" includes the chemical substances themselves; any mixture containing 50 ppm or more of a PCB chemical substance; articles whose interior surfaces are in contact with PCB substances or PCB mixtures necessary to the function of the article (e.g., small capacitors); and any container which holds PCB chemical substances, mixtures or articles and whose interior surfaces are in contact with PCB chemical substances or mixtures not necessary to the function of the article or container (e.g., pipes and drums). This rule would not apply to "PCB Article Containers".

Most PCB's currently in service are used in electrical transformers and capacitors. Therefore, this rule would apply to persons who manufacture, sell, transport, use, service, or repair electrical transformers and capacitors. Electric utilities and other businesses which own or operate large electrical transformers or capacitors (e.g., in buildings and in railroad equipment) would be subject to the rule. Persons who manufacture or distribute equipment containing PCB capacitors such as televisions, microwave ovens, lighting equipment, and air conditioners also would be subject to the rule. Accordingly, new PCB equipment cannot be sold after July 1, 1979, unless an exemption is granted by EPA after receiving a petition (see section IV-F of this Preamble). Once equipment containing totally-enclosed PCB's has been sold to the ultimate consumer for personal use, there can be subsequent sale of the equipment as a used item to anyone by anyone. EPA invites comment on this matter. Manufacturers, owners, operators, and servicers of hydraulic and heat transfer systems containing PCB's (e.g., die casting machines and mining equipment) also would be affected by this rule. Although most hydraulic and heat transfer systems are no longer refilled with PCB's, many are still contaminated with residual concentrations of PCB's.

PCB's also have been widely used as plasticizers, specifically as additives to products such as paints, inks, adhesives, sealants, textile coatings, and certain plastic products. Although most domestic sales of PCB's for these

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uses were discontinued in 1971, many of the PCB's so used in the past will continue to exist in commerce as a result of recycling and the long life of sealants, paints, and the other products containing PCB's. Therefore, this rule may affect persons who recycle, process, or otherwise use products such as waste oil, sludges, contaminated rags, soil, pipes, and any items coated with PCB-impregnated substances.

Similarly, this rule would apply to certain activities involving the operation of equipment which previously held PCB's and which still contains PCB concentrations of 50 ppm or greater, such as refilled transformers, and refilled hydraulic systems and heat transfer systems.

This rule would apply to owners of electromagnets containing PCB's. EPA requests comments and data on the number of such magnets and the amount of PCB exposure to humans and the environment that results from their use and maintenance. Compressors used in natural gas pipelines would also be covered by this regulation. Comments are requested on the number of such compressors, the amount of human and environmental exposure that results from their use and maintenance, and the economic impact of not authorizing their use.

The proposed rule would not apply to sewage sludges, dredge spoils, and spill materials which contain less than 50 ppm PCB. These mixtures are regulated under other statutes administered by EPA. The omission of these mixtures from this regulation does not mean that EPA believes that control of such mixtures with less than 50 ppm PCB is unnecessary.

The manufacture, processing, distribution in commerce, use, and disposal of small quantities of PCB's used for research and development would be excluded from the requirements and prohibitions of § 761.30. This exclusion is proposed so that laboratory quantities of PCB's needed for health research and analytical purposes, can be available. The proposed quantity restriction discussed in section B, below, is intended to provide an adequate safeguard against the abuse of this provision.

NOTE.—If a person other than the owner of a television set, computer, or other PCB equipment replaces a PCB capacitor with another PCB capacitor while repairing the equipment and charges the owner for that capacitor, this transaction is considered distribution in commerce of PCB's. Since the replacement capacitor is considered by EPA to be totally enclosed, this distribution in commerce does not need an authorization to continue through July 1, 1979. However, since all distribution in commerce (except that covered by section 6(e)(3)(C)) is banned after July 1, 1979, unless an exemption is granted by EPA, persons who service or repair PCB equipment for others by installing replacement PCB capacitors must petition EPA for an exemption, as explained in section IV-F of this Preamble. Since the replacement of PCB capacitors should be a relatively infrequent repair and since non-PCB capacitors may be able to replace PCB capacitors when they do fail, the TSCA requirement that EPA grant exemptions for the continuation of this activity may not be as burdensome as it may initially appear.

B. DEFINITIONS

With the exception of "PCB(s)" and "PCB Mixture", the definitions of the Disposal and Marketing rule are applicable without change to this proposed rule.

"PCB(s)". The existing definition of "PCB(s)" includes "PCB Chemical Substance", "PCB Mixture", "PCB Article", "PCB Equipment", and "PCB Container". EPA proposes to add the term "PCB Sealant, Coating, or Dust Control Agent" to this definition. This is a newly defined term discussed in detail below. The effect of this addition would be to require that PCB sealants, coatings, and dust control agents be disposed of in accordance with § 761.10, be marked in accordance in the § 761.20, and be used only as permitted by § 761.30 and § 761.31.

"PCB Mixture". EPA proposes to define PCB mixture as any mixture containing 50 ppm or more of PCB chemical substance. This would have the effect of banning manufacture, processing, distribution in commerce, and use of all mixtures containing 50 ppm or greater of PCB chemical substance in a nontotally enclosed manner unless authorized. In addition, EPA proposes to extend the marking and disposal requirements in Subparts B and C now applicable only to mixtures containing more than 500 ppm of PCB to mixtures containing 50 ppm or greater of PCB. The prohibitions of § 761.30 would also apply to all mixtures containing 50 ppm or greater of PCB. The proposal to regulate only those mixtures containing 50 ppm or more of PCB was selected for the following reasons:

(1) A cutoff of 50 ppm or greater of PCB will exclude from the rule municipal sludges and other mixtures containing low (less than 50 ppm) levels of PCB's whose presence is due to ambient levels of PCB present in the air or water. The PCB's contained in such mixtures are affected by ambient levels and cannot be attributed to any discrete source of contamination, and thus are less amenable to preventive measures.

(2) Certain organic compounds may contain trace amounts of PCB's despite the use of carefully controlled manufacturing processes. With careful manufacture, such compounds will contain less than 50 ppm of PCB.

(3) All of the diffuse and extremely numerous PCB sources of concentrations below 50 ppm cannot practically be dealt with by EPA. A cutoff of 50 ppm has the advantage of limiting EPA administration and enforcement to a manageable number of PCB sources, thus ensuring the maximum effectiveness of the regulation.

(4) Other statutes are available for regulation of mixtures containing less than 50 ppm of PCB, particularly for such sources as municipal sludge and dredge spoils. The proposed regulation under TSCA would not preempt action by EPA or other Federal agencies to control such mixtures under these statutes.

The proposed definition, therefore, is designed to focus Agency attention under TSCA upon the most significant and controllable sources of PCB exposure. EPA recognizes the difficulty of selecting a cutoff level for regulation of PCB's and will revise the level either upward or downward from 50 ppm, if appropriate, based on information supplied during the rulemaking on this rule. Other higher and lower levels have already been suggested, including concentrations of 10 ppm and 1 ppm. These and other suggested alternatives will be carefully evaluated.

PCB's are ubiquitous in the environment. As a result of manufacturing, processing, use, and disposal activities during the past 50 years, PCB's have been introduced into many commercial products, into byproducts and waste materials, and into environmental media including air, water, and soil. EPA believes that it can feasibly regulate the introduction of PCB's into the environment at the 50 ppm PCB level. EPA also believes that the regulation of materials containing less than 50 ppm PCB would, in many instances, constitute an effort to regulate PCB's which have already been introduced into the environment. Even in those cases where material containing less than 50 ppm PCB enters the environment as "new" PCB's, EPA does not believe it is feasible to control the diverse number of items with such low concentrations of PCB's. However, waste oil used as a sealant, coating, or dust control agent with a PCB concentration lower than 50 ppm will be subject to regulation.

In the PCB Disposal and Marking rule, EPA proposed a concentration of 500 ppm PCB. After the rule had been proposed, however, EPA learned that many materials, including some generated in large amounts, may contain PCB's at levels well above general environmental levels but below 500 ppm. For example, while carefully manufactured organic chemicals may contain as much as 25 ppm PCB, process

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upsets may result in production of batches that contain concentrations higher than 50 ppm. Municipal sewage sludge may contain relatively high concentrations of PCB's if a quantity of PCB's has been introduced into the sewer system. Dredge spoils from some rivers may contain more than 50 ppm PCB. Where PCB spills occur, both soil and clean-up materials may be contaminated with PCB's. Taking such considerations into account, EPA is now proposing 50 ppm PCB be set as the lower limit of its definition of PCB mixtures. EPA specifically invites comments and data on the extent to which this proposal (or a lower limit for the definition of PCB mixture) will affect persons involved in manufacture, processing, distribution, use, and disposal of PCB's, and whether this is the appropriate concentration at which to make the distinction described above. As stated above, if written comments or testimony at the public hearing indicate that either a higher or lower concentration is more appropriate, that concentration will be adopted in the final rule.

EPA wants to emphasize that the rule proposed today does not preempt more stringent requirements that may be placed in dredging permits and in any other regulatory tools employed by EPA in controlling the release of PCB's. In particular, if there is a risk that materials such as dredge spoils or sewage sludge will be deposited in water or where they can be carried into water, stricter controls than specified in these regulations may be appropriate. Water has been the most significant pathway for PCB contamination, and serious environmental damage can be expected to result from the deposit in or near water or material containing PCB's even in low concentrations. This is particularly true for dredge spoils and sewage sludge, given the huge quantities of these materials that may be generated.

EPA Regional Offices making decisions on permits for dredge and fill disposal under § 404 of the Federal Water Pollution Control Act (FWPCA), discharge permits under the FWPCA, dumping permits under the Marine Protection, Research and Sanctuaries Act of 1972, or exercising any other relevant authority, will be expected to take such factors into account and to regulate PCB's at levels below 50 ppm under that other authority, wherever appropriate.

"Manufacture and Process for Commercial Purposes". The proposed rule applies to manufacturing (including importation) and processing which is performed for commercial purposes. "Commercial Purposes" means for distribution in commerce, including for test marketing purposes, and for use by the manufacturer, including for use as a chemical precursor. By restricting the scope of the definitions of "manufacture" and "processing" found in TSCA to apply to only those activities that are considered "for commercial purposes", EPA would not regulate certain activities such as the manufacture of a chemical that results in an unintentional PCB impurity. However, because the proposed rule prohibits the distribution in commerce of PCB mixtures, the product would have to be processed to reduce the PCB concentration to below 50 ppm before distribution in commerce. The proposal would also permit the processing of products and plant wastes to concentrate PCB's if the purpose is to dispose of the PCB's and reduce PCB concentrations in the final product.

"PCB Sealant, Coating, and Dust Control Agent". Sealants, coatings, and dust control agents made from waste oil are often contaminated with PCB's and, because of their particular uses, these PCB's are quickly introduced directly into the environment. For example, waste oil is frequently used as a coating for roads, which have well-drained surfaces whose run-off frequently goes to municipal treatment plants or rivers and streams. In addition, although the PCB concentration is low, the large volume of oil that is used results in a large quantity of PCB entering the environment. Because the PCB's in waste oil can so easily find their way into the environment through these uses, the EPA is proposing that waste oil containing any amount of PCB contamination shall not be used as a sealant, coating, or dust control agent. Waste oil containing less than 50 ppm may still be used as a fuel, as a feedstock for re-refining, or any other use except as a sealant, coating, or dust control agent.

EPA is concerned about the use of waste oil for space heating since ambient emissions of PCB's are likely to result. Comments are requested on whether EPA should include waste oil containing less than 50 ppm PCB within this definition, thereby forbidding this use. Comments are also requested on the economic impact of such an action.

"Sale for Purposes Other than Resale". The law exempts any PCB sold for purposes other than resale before July 1, 1979, from the total prohibition on any distribution in commerce. "Sale for Purposes Other than Resale" is defined as sale for purposes of disposal, for purposes of research and development, and for purposes of use by the purchaser. In addition, PCB equipment which is leased before July 1, 1979 for a period of no less than one year will be considered sold for purposes other than resale. The sale will be considered to have occurred as of the date of the signing of the lease. This "sale for purposes other than resale" provision does not apply to sales to or by retailers or persons who service and repair PCB articles and PCB equipment owned by others. These persons clearly purchase PCB's with the intent of reselling them.

The use, finished product, or equipment, would be subject to applicable regulations. This provision of TSCA allows the continued distribution in commerce and use of PCB's in a totally-enclosed manner (or in accordance with an authorization or exemption), rather than forcing them into immediate disposal, causing possible adverse economic consequences. For example, a person (including dealers) may resell a used television instead of throwing it away. Furthermore, this provision would permit the sale for disposal, provided other applicable requirements of the rule are not violated.

"Significant Exposure" and "Totally Enclosed Manner". TSCA prohibits the manufacture, processing, distribution in commerce, or use of any PCB on or after January 1, 1978, in other than a totally-enclosed manner. TSCA defines "totally-enclosed manner" as any manner which will ensure that any exposure of human beings or the environment to PCB's will be insignificant. TSCA section 6(e)(2)(C) requires the Administrator to determine by rule what constitutes insignificant exposure. EPA proposes to define "insignificant exposure" as no exposure; i.e., *any* exposure of human beings or the environment to PCB chemical substances or PCB mixtures is significant.

EPA considered a finite concentration as the demarcation between "significant" and "insignificant exposure". The chief reason for not taking this approach, however, is that there simply is no rational basis for selecting any particular exposure level above zero for the purposes of this regulation. PCB's are extremely persistent and ubiquitous in the environment, bioconcentrate and bioaccumulate within many organisms, induce a variety of adverse effects in humans and laboratory mammals, and possess no known "no effect" level for some of these effects. Based on the existing information on the environmental risks associated with exposure to PCB's (summarized in the Support Document), it is apparent that there is no finite level at which continuing releases into the environment could be regarded as insignificant. Accordingly, the Administrator has determined that any exposure to PCB's is significant and shall not be permitted unless explicitly authorized or exempted.

This determination should not be construed as an expression of EPA policy regarding acceptable or allowable exposure to all toxic substances; rather, it is intended to provide, for EPA and persons who would be affected by this rule, a clear distinction be-

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tween activities that will and will not be considered "totally enclosed". It is not a determination that any exposure to PCB's presents an unreasonable risk. EPA's determinations of which non-totally enclosed activities will be allowed to continue will be based on judgments of whether they pose unreasonable risks to health and the environment, taking into account the factors enumerated in section 6(c)(1). Thus, the finding that any exposure to PCB's is significant serves simply to define any activity that emits or discharges PCB's as not "totally enclosed." In turn, any PCB activity that is not "totally enclosed" is banned unless the risk associated with that activity is determined to be reasonable. If EPA finds that a PCB activity does not present an unreasonable risk, EPA may authorize or exempt that activity.

This determination is not, as it may seem, inconsistent with the fact that the Agency has proposed a finite concentration of PCB's (50 ppm) in the definition of PCB mixture. Although any exposure to PCB's is significant, it would be impossible to impose regulations applicable to the use of air, water, soil, and everything else that may contain low levels of PCB's. Exposure of human beings or the environment to PCB's will be assumed to exist if any PCB's are detected by any scientifically acceptable analytical method. However, a person covered by this proposed regulation would not be held responsible for exposures to background levels of PCB's, which, although they may be detected, are not the result of that person's involvement with PCB's. That is, if PCB's are detected in the vicinity of a PCB activity, but the concentration detected is no higher than the ambient level which would normally be expected in the absence of this activity, such PCB's will not be considered the result of the activity. Because the highest ambient levels of PCB's measured to date are well below the levels normally associated with the manufacture, processing, distribution, and use of PCB's, there should be little difficulty in distinguishing ambient background levels from those associated with specific activities.

"Small Quantities for Purposes of Research and Development". The phrase "small quantities for purposes of research and development" is defined as those quantities of PCB substances or PCB mixtures contained in hermetically sealed five milliliter containers which are manufactured or processed only for purposes of scientific experimentation or analysis. This regulation would permit the production of small quantities of PCB chemical substances or PCB mixtures to be used for research, development, or analysis. Such PCB's can be manufactured in small quantities and handled under controlled conditions by technically qualified individuals.

There is no limit on the number of containers that a person may manufacture or use. This is to permit the operation of supply houses which may make or stock a large number of such containers of PCB at one time and sell from this inventory to individual research firms. The five milliliter volume limit should ensure that any PCB's made will be used only for research and development. Five milliliters should provide an adequate amount for these purposes. For example, a PCB sample of this size is adequate for use in gas chromatograph tests. These small quantities would still be subject to the disposal and marking requirements of § 761.20.

C. DISPOSAL REQUIREMENTS

The proposed rule revises the requirements of § 761.10 with respect to the disposal of transformers in which the dielectric fluid has a PCB concentration less than 500 ppm, but greater than, or equal to, 50 ppm. Disposal of such transformers by incineration or in a chemical waste landfill would not be required by this rule provided that the dielectric fluid contained in these transformers is first drained and disposed of in accordance with the requirements of § 761.10(b). Therefore, these transformer carcasses could be disposed of in a municipal landfill or sold for salvage.

EPA has not proposed restrictions on the salvaging of PCB transformer carcasses which originally contained dielectric fluid with a PCB concentration less than 500 ppm because: (1) There should be little human and environmental exposure to PCB's; and, (2) valuable copper and steel could be salvaged for recycling. However, EPA recognizes that it may be necessary to establish specific procedures applicable to the salvage of these transformer carcasses in order to prevent any undue exposure to PCB's. In this regard, EPA requests comments and data on: (1) the procedures used by salvage operators in handling these transformers; (2) the need for regulatory controls on salvage of PCB transformers; (3) the salvage value of transformers; (4) the potential for, and extent of, human and environmental exposure to PCB's which may occur as a result of salvage operations; (5) the number of transformers which are salvaged on an annual basis; (6) the number of salvage companies which can salvage PCB transformers; and (7) other methods of disposing of the PCB transformer carcasses.

The proposed rule would require that the dielectric fluid from any transformer which is manufactured before January 1, 1979, and which is filled primarily with non-PCB dielectric fluid (e.g., mineral oil) be disposed of in one of two ways: (1) in a high-temperature incinerator (Annex I) without any testing for PCB; or (2) in any other manner if a test for PCB shows that the concentration is less than 50 ppm. EPA is aware that there may be a very large volume of this fluid that will require special disposal and this disposal requirement may be expensive. Further, high temperature incineration of the mineral oil will not utilize the oil as fuel because of the overabundance of high Btu hydrocarbon wastes. The incremental cost of this disposal requirement may be as high as $25,000 per pound of PCB. The total cost of this disposal requirement, over approximately 30 to 40 years, is $612-$769 million. In view of the low level of PCB contamination in this fluid, disposal alternatives may be available which would substantially reduce disposal costs while still resulting in high levels of PCB destruction. Utility power generation units and cement kilns may be able to achieve very high destruction efficiencies even though they may not meet the requirements of Annex I. In addition, these alternatives may utilize the mineral oil as fuel. However, EPA has little or no data available to characterize the performance of these alternatives. EPA therefore requests comments on alternative methods of disposal of these dielectric fluids. Comments are requested on the estimated volume of dielectric fluid that would require such disposal annually, what restrictions would be necessary to ensure an acceptable level of destruction efficiency, and the cost of disposing of the fluid by means of high-temperature incineration versus the cost of alternative disposal methods. Comments are requested concerning the estimates of the marginal costs as stated above and whether such costs (if correct) are justified in view of the additional environmental PCB contamination that would result from not requiring this method of disposal. EPA is considering requiring labeling of all transformers manufactured either before or after January 1, 1979. This labeling would make recognition of those transformers subject to this disposal requirement much easier. Comments are requested on the feasibility of such a requirement and the costs and benefits that would result.

D. MARKING REQUIREMENTS

This proposed regulation would amend the existing marking requirements for PCB's contained in § 761.20. Those PCB transformers which contain dielectric fluid with a PCB concentration less than 500 ppm would not be required to be labeled.

E. PROHIBITIONS

Section 761.30 would implement section 6(e)(2) and (e)(3) of TSCA, setting out the specific prohibitions of PCB activities. These were described in Sec-

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tion I of this Preamble. In addition, two findings of the Administrator are stated in § 761.30. The first is the Administrator's finding, pursuant to section 12(a)(2) of TSCA, that the manufacture, processing, and distribution in commerce of PCB's for export presents an unreasonable risk of injury to health within the United States and to the environment of the United States. This finding is more fully discussed in Section VIII of this Preamble. The second is that the distribution in commerce and use of intact, non-leaking transformers, other than those used on locomotives and self-propelled railroad cars, and capacitors is considered distribution in commerce and use in a totally enclosed manner.

According to section 6(e) of TSCA, disposal is an activity separate from processing and distribution in commerce. Any preparation or processing for disposal is considered to be disposal and not distribution in commerce or processing. Therefore, any such activity, if in the course of compliance with pertinent disposal requirements, is not subject either to the January 1, 1978, totally enclosed manner requirements or to the July 1, 1979, bans.

P. AUTHORIZATIONS AND EXEMPTIONS

In enacting section 6(e), Congress recognized that the statutory bands could significantly disrupt certain activities involving PCB's, particularly those for which viable substitutes are not available. TSCA authorizes EPA to grant by rule two types of exceptions to the prohibitions of such activities. First, the Administrator may authorize the continued manufacture, processing, distribution in commerce, or use of PCB's in a non-totally enclosed manner after January 1, 1978, if he finds that the activity will not present an unreasonable risk of injury to health or the environment. The criteria for determining reasonable risks is described in the Support Document. Second, the Administrator may grant exemptions upon petition, for periods of no more than one year at a time, from the 1979 bans on manufacturing, processing, and distribution in commerce of PCB's, if he finds that the activity does not present an unreasonable risk and that good faith efforts have been made to develop substitutes for the PCB's used in that activity.

Section 6(e)(3) does not impose a final ban on the use of PCB's but it does ban all manufacturing, processing, and distribution in commerce. As a result, EPA may authorize a non-totally enclosed use of PCB's for whatever time period it feels is appropriate under section 6(e)(2). However, authorizations for non-totally enclosed manufacturing must end on January 1, 1979, since that is when the total ban on manufacturing begins. An exemption is required to continue any type of PCB manufacturing after that date. For the same reason, authorizations for non-totally enclosed processing and distribution in commerce must end on July 1, 1979.

NOTE.—The term "distribution in commerce" is used to refer to the sale of a PCB. However, it also means the delivery of a PCB in conjunction with a sale or the holding of a PCB after sale for purposes of resale. An example of the latter is a distributor who buys from the manufacturer and then resells to retailers; while the PCB's are in his inventory, they are being held for further distribution in commerce. However, distribution in commerce does not include the holding of PCB's for purposes solely of use by the holder. For the purposes of TSCA, "processing" is limited to that processing which takes place after manufacture of the PCB in preparation for distribution in commerce. "Processing" does not include processing performed by the owner of the PCB subsequent to distribution in commerce for his own use.

The servicing of a PCB transformer is an example of how all of these concepts fit together. If a PCB transformer is removed from service and returned to the owner's own service shop where PCB dielectric fluid is added to it, the servicing could be covered by a use authorization. However, if that same transformer was sent to a transformer service company that added PCB's to the transformer, the servicing would be both processing and distribution in commerce since the PCB dielectric fluid would be sold by the service company to the transformer owner (thus the title to the PCB's would have passed from one owner to another). To continue this activity, the transformer service company would need authorizations for both processing and distribution in commerce. In addition, the service company would have to petition for, and receive, an exemption each year to continue this activity after June 30, 1979. Even though the actions performed in both shops are the same, the transformer service company is subject to much more rigorous requirements than the transformer owner.

As in the transformer servicing example above, a person servicing a computer who does not own that computer is considered to be processing and distributing in commerce if he installs a PCB capacitor in the computer. To continue that practice after July 1, 1979, an exemption will be required. Finally, a person who leases a computer may not sell that computer after July 1, 1979, unless the computer has been leased for no less than one year. A person could apply for an exemption so that he could sell a computer which has been leased for less than one year.

1978 authorizations. Section 6(e)(2)(B) of TSCA permits EPA to authorize by rule the manufacturing, processing, distribution in commerce, and use of PCB's in a nontotally enclosed manner if these activities will not present an unreasonable risk of injury to health or the environment. EPA has determined that certain non-totally enclosed PCB use activities will not present an unreasonable risk and proposes to authorize these use activities for a period of 5 years after the effective date of the final rule. At that time, EPA will examine the need for continuing these authorizations. In making this determination, EPA weighed the effects of PCB's on health and the environment, the magnitude of exposure, and the reasonably ascertainable economic consequences of the rule. This determination is fully discussed in the support document/voluntary draft environmental impact statement.

1979 exemptions. Exemptions from the manufacturing, processing, and distribution in commerce bans required by § 6(e)(3)(A) of TSCA may be granted for no more than 1 year at a time and must be granted by rulemaking each year. In general, persons must petition for exemptions which will be granted on an individual basis. For the purpose of petitioning for an exemption, "person" may include a trade association or any other entity representing a number of users. In some instances, EPA may also consider accepting petitions from and granting exemptions to a class rather than solely to an individual. Persons may petition for an exemption only after the effective date of this rule. The final rule will describe the requirements for filing petitions and for the information to be provided in the petitions.

Based upon the authorizations proposed, EPA anticipates petitions for continuous miner motor rebuilding and for transformer servicing. EPA also anticipates petitions for exemptions for distribution in commerce, after July 1, 1979, of PCB consumer equipment such as air conditioners, televisions, and microwave ovens remaining in the inventories of small wholesale and retail businesses. EPA is concerned about the potential for undue hardship on such small businesses that might be created by the July 1, 1979, ban on sale of PCB equipment. EPA also is aware that the marginal impact on environmental PCB concentrations from the sale of these inventories of PCB consumer equipment may be small.

In order to minimize any problems which wholesalers and retailers might have in complying with the ban, EPA encourages manufacturers of PCB equipment to inform all participants in the distribution in commerce chain (e.g., wholesalers, jobbers, retailers) of the identity of all PCB equipment manufactured after July 1, 1978. Participants in the distribution in commerce chain should be made aware of

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the consequences of not selling this equipment by July 1, 1979, and should be able to receive help, as needed, to segregate PCB equipment from non-PCB equipment. If voluntary efforts to inform the distribution chain do not work, EPA may consider adopting regulatory requirements that manufacturers adequately inform the distribution chain. Comments are requested on the need for mandatory notification requirements, the information that should be distributed, and the costs that would be involved in such an information dispersal system.

In evaluating any petitions for exemptions from the 1979 bans, it should be noted that an important criterion for granting an exemption from the July 1, 1979, ban will be good faith efforts to develop PCB substitutes. Certainly small businesses and retailers would not be expected to develop substitutes, but their efforts to eliminate PCB equipment from their inventories certainly could be evaluated. In addition, any efforts of firms to overload the distribution system with PCB equipment by manufacturing or buying more equipment than would be normally distributed in the given time frame would be considered a negative factor in evaluating an exemption petition.

Transformers. Many PCB transformers other than those used on railroad locomotives and self-propelled cars are routinely serviced and sometimes rebuilt. The use of these transformers generally involves no release of PCB's and thus constitutes a totally enclosed activity permitted by TSCA. However, servicing procedures often result in exposure of the environment to PCB's. There are two categories of servicing: rebuilding and routine servicing.

When a transformer fails, it is uaually disposed of. Sometimes, however, it is rebuilt in a relatively open operation which involves draining the liquid, removing and disposing of the old liquid, rewinding new coils, and refilling the transformer with new liquid. This practice can result in substantial exposure of both humans and the environment to PCB's. EPA has determined that it is unreasonable to allow the exposure which occurs during rebuilding of transformers containing fluids with PCB concentrations of 500 ppm and greater, but proposes to permit rebuilding of transformers containing fluids with PCB concentrations less than 500 ppm.

During routine servicing, such as testing the liquid or reparing a gasket, some amount of liquid is drained, possibly filtered, and returned to the transformer. Some environmental contamination occurs. Routine servicing, however, causes far less exposure to PCB's than rebuilding and reduces the substantial costs of frequent transformer replacement, as well as the hazard of catastrophic transformer failure. Therefore, the proposed authorization allows routine servicing of transformers containing dielectric fluid with 50 ppm and greater PCB. In addition, an authorization is proposed for processing and distributing in commerce PCB fluid only for servicing transformers. Persons subject to the latter authorization must keep certain records and provide one report to EPA. As explained above, this authorization will be needed by service companies which service PCB transformers. This authorization will expire on July 1, 1979, while the use authorization will expire 5 years after the effective date of the rule. During this 5-year period, EPA will be examining the use of substitutes in older transformers to determine the feasibility of phasing out all use of PCB's.

The proposed rule authorizes the refilling of transformers with PCB fluid. However, the proposed rule does not permit the rebuilding of PCB transformers which contain dielectric fluid with a PCB concentration of 500 ppm or greater. EPA is considering the following alternative for transformers containing dielectric fluid with a PCB concentration of 500 ppm or greater: (1) Such transformers could be topped-off only with non-PCB fluid; (2) such transformers would be required to be refilled with non-PCB fluid if they are ever completely drained for servicing; and (3) such transformers could be rebuilt provided that they are refilled with non-PCB fluid. Refilling under such an authorization would be subject to specified flushing procedures. EPA invites comments on this alternative, particularly with respect to the technical feasibility and economic consequences of adopting this alternative.

The vast majority of transformers are filled with mineral oil dielectric fluid. Although mineral oil should be free of PCB's, there may be instances where PCB contamination has inadvertently occurred. Where the concentration of PCB's in a mineral oil transformer equals or exceeds 50 ppm, that transformer would be considered a PCB transformer under the definitions of this rule. The proposed rule provides a less costly method of disposal for any transformer whose dielectric fluid contains less than 500 ppm but greater than, or equal to, 50 ppm PCB. Also, because of the decreased risk associated with lower concentrations of PCB's in dielectric fluid, the servicing of transformers containing dielectric fluid with less than 500 ppm is not restricted.

The number of mineral oil transformers contaminated with PCB is unkown to EPA at this time. EPA is interested in receiving the following data: (1) the percentage of mineral oil transformers contaminated with PCB's; (2) the PCB concentrations in such transformers; (3) the frequency of failure of mineral oil transformers; (4) the percentage of failed mineral oil transformers which are rebuilt; (5) present methods of disposal of mineral oil; (6) the anticipated impact if the rebuilding of PCB contaminated mineral oil transformers is not permitted; and (7) and the anticipated costs of disposing of these transformers and their mineral oil contents. All data on mineral oil transformers should distinguish between pole transformers and other mineral oil transformers.

There are recordkeeping requirements and a reporting requirement for persons who service transformers owned by others with PCB fluid. These requirements relate to the person's inventory of PCB fluid and the dates and nature of servicing performed with PCB's. The information will enable these persons and EPA to accurately account for PCB's used as a result of this authorization. Comments are invited on the impact of these requirements and if any additions or deletions are appropriate.

Transformers in railroad locomotives and self-propelled cars. Transformers in approximately 1,000 electric railroad locomotives and self-powered cars operated in the northeastern United States by Amtrak, Con-Rail, and five intracity transit authorities contain PCB fluid.

The use and servicing of these transformers cannot be considered totally enclosed. Frequent environmental exposure to PCB mixtures spilled onto the roadbed occurs when transformers overheating causes fluid overflow and when rocks and debris damage the transformers while they are in service. PCB's are also lost due to volatilization and in servicing operations. These problems are made more severe by the fact that railroad transformers are often underdesigned because of space limitations.

It is logistically and economically infeasible for these railroad transformers to be replaced in the immediate future. Thus, the absence of an authorization for the continued use and servicing of this equipment in a nontotally enclosed manner could result in extensive curtailment of railroad service and adverse economic and social consequences. EPA therefore proposes to authorize the use of railroad transformers, including servicing, subject to certain conditions designed to reduce the PCB concentration of these transformers' dielectric fluid and thereby reduce the exposure of humans and the environment to PCB's.

The proposed rule would authorize unrestricted use and servicing of railroad transformers for 15 months after the effective date of the regulation, except that no authorization would be provided to allow transformer service

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companies to process or distribute in commerce PCB dielectric fluid for the purposes of servicing of PCB railroad transformers. At the end of 15 months, the PCB concentration of the railroad transformers' dielectric fluid must be no more than 40,000 ppm (4 percent). EPA's intent is to allow either the replacement of the PCB railroad transformers with non-PCB units or the refilling of the transformers with non-PCB dielectric fluid so that the concentration of PCB's in the fluid is no more than 40,000 ppm. The rebuilding of railroad transformers and subsequent refilling with PCB's would not be permitted.

Furthermore, the authorization requires that the PCB concentration in the railroad transformers' dielectric fluid be reduced to no more than 1,000 ppm 3 years after the effective date of the regulation. This reduction will greatly reduce human and environmental exposure and is believed attainable through the application of activated carbon filtration. Since this technology has not yet been applied in relation to railroad transformers, some uncertainty does exist. For this reason, EPA may make appropriate changes in this 1,000 ppm requirement, including raising the level or lowering it, as more and better information becomes available about the use of activated carbon filtration and other available technology. This authorization would expire 5 years after the effective date of the regulation, when EPA would reevaluate the need for continuing the authorization.

The rule would require testing to determine the PCB levels in the transformers. The results of this testing, as well as the time at which other servicing activities are performed in accordance with the rule, would have to be recorded. Based on the information available to the Agency at this time, the proposed refilling of railroad transformers and carbon filtration of the dielectric fluid should permit the elimination of the use of PCB's without undue economic and social dislocations or undue health or environmental danger.

There are recordkeeping requirements and a reporting requirement for persons who own railroad transformers. These requirements relate to the person's inventory of transformers and refilling progress. This information will enable EPA to assess a person's compliance with the requirements of the authorization. Comments are invited on the impact of these requirements and if any additions or deletions are appropriate.

Mining equipment. There are two types of mining machinery which use PCB fluids as a motor coolant: loaders and continuous miners. Although production of this equipment has ceased, many are still in use. Approximately 652 motors containing PCBs used on loaders are currently operable; and there are about 18 continuous miners for which there are about 46 PCB motors either in use or kept as spares. The operation of this machinery results in the loss of PCB fluids from leaks and overflows into the environment. Servicing procedures, performed either in the shop or in the field, result in additional environmental exposure to PCBs. to require replacement of these motors by the effective date of this rule would be technically and economically infeasible. To avoid the adverse cosequences caused by an immediate use ban, EPA is proposing a phase out of these PCB motors which will coincide with the servicing schedule applicable to these motors. Loaders and continuous miners are given different compliance schedules since they pose different problems.

Because of the cutting head design, the motors on continuous miners cannot be rebuilt as non-PCB motors. Furthermore, the cost of replacing the cutting head motors is prohibitive in light of the limited remaining expected lifetime of the continuous miners. The only feasible alternative is replacement of the entire continuous miner unit. Because of the lead time necessary to order and produce this type of equipment, the replacement of continuous miners cannot begin for some time after the effective date of this rule. Therefore, EPA proposes to permit the rebuilding of continuous miner motors without conversion into non-PCB motors for 12 months after the effective date of the rule and to permit the use of these units until December 31, 1981. Since the rebuilding of these miner motors involves the use of PCB fluid, such rebuilding when done by companies who service other persons' motors constitutes processing and distribution in commerce of PCBs. Therefore, an authorization for service companies to process and distribute in commerce PCB fluid is proposed so that the continuous miner motors can be rebuilt. These service companies will have to petition EPA for an exemption to rebuild continuous miner motors after June 30, 1979. Due to the frequent need for service shop work on continuous miners, EPA believes that few continuous miners will be able to remain in use until December 31, 1981.

The PCB motors on loaders can be replaced with, or rebuilt as, non-PCB air-cooled motors. EPA is proposing that these motors be replaced or rebuilt as air-cooled motors when they are returned to service shops for maintenance. This process of rebuilding or replacement would take three years provided that normal maintenance patterns are followed. Therefore, use of these loaders is authorized until December 31, 1981. After this date, the proposal would not permit the use of any loaders or continuous miners containing PCB motors. Topping-off the motor fluid levels in the field is considered a use.

There are recordkeeping requirements and a reporting requirement for persons who own and service PCB mining equipment. These requirements relate to the person's inventory of PCB fluid and the dates of rebuilding mining equipment motors. This information will enable these persons and EPA to accurately account for PCBs used as a result of these authorizations and will permit EPA to assess a person's compliance with the requirements of these authorizations. Comments are invited on the impact of these requirements and if any additions or deletions are appropriate.

Hydraulic die casting systems. A large number of die casting systems are in use, some of which have been filled with PCB hydraulic fluid at some point in the past. Although this use of PCB's has been discontinued, the equipment is still in service. Some systems have been topped-off with non-PCB fluids, and others have since been drained and flushed in an attempt to reduce PCB contamination. However, systems may still be contaminated with residual PCB's which are gradually released from rubber surfaces and with PCB's that remain after flushing. Therefore, hydraulic die casting systems can contain concentrations of PCB ranging from a few to thousands of parts per million. These systems leak considerably, even when properly maintained. In addition, some of the fluid volatilizes at the high operating temperatures. These losses result in water effluents as well as air emissions, both of which have contributed to existing levels of PCB contamination in the environment.

Mandatory removal of these systems from service would result in widespread economic disruption in industries using die castings. On the other hand, the continued uncontrolled use of these systems would result in releases of substantial amounts of PCB's into the environment. EPA is proposing to authorize the continued servicing and use of PCB-contaminated hydraulic fluid in those systems which now contain hydraulic fluid whose PCB concentration is greater than, or equal to, 50 ppm subject to certain conditions. These conditions would be that the concentration of PCB must be reduced to no more than 50 ppm at the end of the first year after the effective date of this rule and that this concentration must be maintained or reduced through periodic fluid replacement or servicing. Testing and necessary servicing or replacement to achieve and maintain a concentration of 50 ppm or less PCB would have to be performed at least every six months.

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EPA has learned that one company which periodically services the hydraulic fluid has reduced PCB concentrations to undetectable levels. This company's experience indicates that routine servicing can eventually eliminate the need for continued flushing. As a result, the semi-annual check and processing should substantially reduce total environmental exposure to PCB's. Note that the drained PCB fluid would be subject to applicable disposal regulations.

The full extent of PCB contamination of hydraulic die casting machines is unknown. Except in a few instances, the extent and types of efforts to reduce PCB concentration are also unknown. Comments and data are invited on: (1) the number of PCB contaminated die casting systems in existence; (2) the average liquid volume of the systems; (3) the range of system liquid volumes; (4) the amount of fluid required to routinely top-off these systems and at what time intervals; (5) whether systems are routinely drained or topped-off; (6) the effect of routine servicing on the level of PCB contamination; (7) what specific efforts have been made to reduce PCB contamination and the success of these efforts; (8) how the hydraulic fluid can be serviced to remove PCB's; (9) the present level of PCB contamination in systems; (10) the cost of new systems; (11) the cost of processing fluid; and (12) the cost of draining and refilling systems. Recent efforts have been made to develop methods such as carbon filtration and distillation for removal of PCB's from dielectric fluid. Comments are requested on the possible use of these methods to reduce PCB contamination in these hydraulic fluids.

EPA also realizes that this requirement could be extremely costly unless carbon filtration and distillation are feasible for the removal of residual PCB's from hydraulic fluid. If this technology does not prove feasible, the incremental cost of this requirement could be as high as $26,000 per pound of PCB removed. Comments are requested concerning the estimates of the marginal costs as stated above and whether such costs (if correct) are justified in light of the additional environmental PCB contamination that would result from not requiring this method of disposal.

There are recordkeeping requirements and a reporting requirement for persons who own PCB hydraulic die casting systems. These requirements relate to an inventory of contaminated systems, the dates of servicing, and the PCB concentrations, if measured. This information will enable these persons and EPA to assess the progress toward reducing the PCB concentrations in these systems. Comments are invited on the impact of these requirements and if any additions or deletions are appropriate.

Carbonless copy paper. Prior to 1971, carbonless copy paper distributed by NCR Corp. was made with ink containing PCB's. There does not appear to be a way of distinguishing PCB carbonless copy paper from non-PCB carbonless copy paper, with the possible exception of dates or other indications in unused inventories. A large portion of the PCB carbonless copy paper that has not been destroyed is probably in files. The proposed regulation contains an authorization for the use of PCB carbonless copy paper for the following reasons: (1) the inability to readily distinguish between PCB and non-PCB carbonless copy paper; (2) the enormous undertaking that would be required of both business and government to purge files of PCB carbonless copy paper, even if a way to distinguish it from non-PCB carbonless paper were devised; and (3) the small amount of PCB on each piece of carbonless copy paper. In addition, paper recyclers have for some time been careful not to accept any carbonless copy paper for recycling.

G. ANNEX VII

A new annex is proposed for Part 761. This annex specifies the format for a PCB Exposure and Contamination Control Plan (ECCP). The purpose of the ECCP is to help insure that risks associated with activities either authorized by or exempted from the requirements of § 761.31 are minimal. The plan would require delineation of all steps and processes involved in an authorized or exempted activity, and would include requirements for notification of proper authorities and basic steps for response to releases, such as spills, of PCB's. Each person authorized (or at some later date exempted) to process, distribute in commerce, or use PCB chemical substances or PCBV mixtures would be required to develop and implement an ECCP.

There are two major parts of the ECCP. The first is a written operations plan that describes step-by-step procedures to be followed in the performance of an authorized PCB activity. The second is a response and control plan that describes step-by-step procedures to be followed when a release of PCB's occurs at a PCB use or servicing operation. The plan would include procedures for incidents that range from releases of PCB's that are captured in drip pans to much greater releases such as the loss of the entire contents of a PCB transformer with some or all of the loss escaping the controls established in the operations plan. Copies of the ECCP would be kept: (1) With the Spill Prevention Control and Countermeasure (SPCC) Plan if the person is required to keep an SPCC plan; (2) in the office of the facility where the activity is being performed and with other PCB files at the principal office of the organization; and (3) with each group of employees as they perform activities that may result in an exposure or contamination incident. Finally, the plan would be certified by a Registered Professional engineer (P.E.). The P.E. would certify that the plan has been prepared in accordance with good engineering practice and that it complies with the requirements of Annex VII. This certification is not determinative of the plan's adequacy. EPA, at its discretion, may review the plan. If EPA finds that the plan is inadequate or that a person is not implementing any provision of the plan, EPA may take one of the following actions: (1) Require that a plan acceptable to EPA be written and implemented; (2) suspend a person's authorization until a plan acceptable to EPA is written and implemented; or (3) require that a person cease the PCB activity.

Requirements for plans to prevent the discharge of PCB's shall be required by rules to be issued by EPA pursuant to § 311 of the Federal Water Pollution Control Act at a later date.

V. Broadening of Disposal Requirements

By changing the definition of PCB Mixture from a mixture containing 500 ppm or more PCB to one containing 50 ppm or more PCB, more PCB-contaminated articles and mixtures will require disposal in accordance with § 761.10. Among the materials that will be affected by the change are spill materials, dredge spoils, and municipal sludges with PCB concentrations between 50 ppm and 500 ppm. Liquid mixtures in this range would have to be incinerated. PCB articles also would have to be incinerated unless the appropriate EPA Regional Administrator determines that it is infeasible to do so. If there are mineral oil transformers contaminated with greater than 50 ppm PCB (as discussed above in Section IV-C of this Preamble), the mineral oil would have to be incinerated.

VI. PCB Activities Not Authorized by This Rule

A. MANUFACTURE OF CAPACITORS

PCB's have been used as the dielectric fluid in almost all alternating current capacitors manufactured in the United States since the mid-1930's. The manufacture of capacitors is an activity which cannot be considered totally enclosed and is a major source of PCB releases into the environment.

An authorization for the continued manufacture of capacitors is not proposed, primarily due to the availability of substitutes and the negligible eco-

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nomic impact resulting from the ban on this manufacturing activity. In addition, by the time this rule is promulgated, companies are expected to have depleted their PCB inventories and completed the conversion to use of non-PCB dielectric fluids in the manufacture of capacitors. The extent of adverse economic consequences, if any, probably will be limited to small inventory losses of PCB chemical substances.

B. ACTIVITIES INVOLVING DYES AND PIGMENTS

By changing the definition of PCB mixture from 500 ppm to 50 ppm, the proposed rule may now affect certain companies and products in the dye and pigment industry. Based on a very small number of tests, industry representatives have suggested that there may be a problem with PCB contamination of some pigments. However, the EPA has insufficient data to reach any conclusions in this regard. Comments and data are requested on: (1) The technical and economic effects of the rule on this industry; (2) the specific processes and products that would be affected; (3) methods for reducing PCB levels in the affected products; (4) quantity of contaminated waste that will have to be disposed of; (5) plans and lead times for implementing new technology; and (6) the economic costs of possible alternatives to the present proposal. Should it be determined, in the course of the rulemaking, that the dye and pigment industry would need an authorization to continue its operations and it is also determined that granting such an authorization would not present an unreasonable risk to health or the environment, such an authorization may be granted in the final rule.

VII. MANUFACTURING, PROCESSING, OR DISTRIBUTION IN COMMERCE OR PCBS FOR EXPORT

Section 12(a) of TSCA states that no part of TSCA shall apply to the manufacture, processing, or distribution in commerce of a chemical intended solely for export from the United States. However, if the Administrator finds that the manufacture, processing, or distribution in commerce of a chemical for export presents an unreasonable risk to health or the environment in the United States, those activities may be regulated as well.

It is the clear intent of TSCA to minimize the addition of PCBs to the environment of the United States. The extreme persistence of this chemical can lead to long term, long distance transport, and there is existing evidence of PCB contamination far from any source of PCB's. EPA has determined that the manufacture, processing, or distribution in commerce of PCB's for export constitutes an unreasonable risk to health and the environment in the United States. Therefore, EPA is proposing to prohibit: (1) The non-totally enclosed manufacture, processing, and distribution in commerce of PCB's for export as of the effective date of this rule; (2) any manufacture of PCB's for export after January 1, 1979; and (3) any processing or distribution in commerce of PCB's for export after July 1, 1979. EPA knows of no non-totally enclosed activities for export which could be deemed to pose reasonable risks to health and the environment of the United States and, therefore, has proposed no exceptions to this finding.

Section 12(b)(2) of TSCA requires any person who exports or intends to export a chemical substance or mixture for which a rule has been proposed under § 6 to notify the Administrator of such export or intent to export. Guidelines with respect to this requirement for such persons can be found in another part of this issue of the FEDERAL REGISTER.

VIII. SUMMARY OF ECONOMIC CONSEQUENCES

Section 6(e) of TSCA bans the manufacture, processing, distribution and use of PCB's except as authorized or exempted by the Administrator of EPA. These authorizations and exemptions, however, are discretionary and can be granted only upon a finding that a particular PCB activity does not pose an unreasonable risk to health or the environment.

The impacts of both the statute and the regulation have been assessed and are discussed below. Additional information on these impacts is contained in *Microeconomic Impacts of the PCB Ban Regulation* (EPA 560/6-77-0351) which can be obtained from the Industry Assistance Office of the Office of Toxic Substances upon request (see the beginning of this Preamble for the address and telephone number).

A. IMPACT OF THE STATUTE

EPA believes it was the clear intent of Congress, as expressed in the legislative history, that the manufacture of PCB chemical substance should cease. Since no more PCB chemical substance will be made, it follows that there can be no future manufacturing of PCB transformers or capacitors. Consequently, the costs attributed to the cessation of the manufacture of PCB chemical substance, PCB transformers, and PCB capacitors are considered impacts of the statute, not of the regulation.

These costs include $15–$20 million per year in increased capacitor costs that will be borne by utility and industrial users. This results from an across-the-board increase in capacitor prices of 10–20 percent due to the higher costs of PCB substitutes. This cost will continue indefinitely, unless the cost of these substitutes falls due to some unforeseen reason.

Purchasers of non-PCB transformers will incur increased costs of up to $10 million per year, depending on the particular substitute dielectric fluid selected. This cost will also continue indefinitely.

These increased costs of transformers and capacitors will be passed on through a minimal increase in the cost of electricity to consumer and industrial users.

B. IMPACT OF THE RULE

The greater portion of the cost of the rule will be incurred by owners of mineral oil transformers which are contaminated with PCB concentrations of 50 ppm to 500 ppm. EPA estimates that testing these transformers for PCB contamination levels and disposing of the contaminated PCB fluid will cost between $612 and $769 million over the next 30 to 40 years, or approximately $23 million per year. These costs are based upon the required disposal of the contaminated mineral oil by high temperature incineration. However, they could be substantially reduced if EPA should decide, based on public comments, to permit a less costly disposal alternative to high temperature incineration.

The ban on rebuilding transformers which contain dielectric fluid with a 500 ppm or greater PCB concentration will cost the owners of these transformers approximately $15 million annually. This cost will continue over a period of 30 years until the transformers are technologically or economically obsolete. About two thirds of these transformers are owned by commercial and industrial firms and the remainder by utilities. The impact of this rule with respect to transformers is expected to have a negligible effect on the cost of electricity, and no significant impact on non-utility owners.

Railroad and transit companies which are affected by this rule will incur total additional operating costs of about $12.4 million over the next three years. These companies are in financial trouble. However, funding may be available through Federal subsidies.

The increased costs associated with the phase out of PCB mining equipment will total $3 million over the next three years. These costs are not expected to significantly affect the equipment owners. Also, the phase out of this equipment over the next three years is expected to cause no disruption of coal production.

Since very little is known about several uses of PCB's, an estimate of the total cost of complying with the proposed rule is difficult to make with respect to these uses. For example, the number of hydraulic die casting machines in operation, the volume of

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PCB hydraulic fluid contained in these machines, and the extent of PCB contamination of this fluid is currently unknown. The initial cost of the regulation will be about $10 per gallon of capacity for each die casting machine. This would imply a cost of about $10,000 for a 1,000 gallon machine. Costs in later years would be significantly lower depending upon the contamination present in each machine, and the type of processing chosen to lower the contamination. An EPA contractor estimates that there may be several thousand contaminated machines in use. Thus, total costs in the few first years are estimated to be at least $10 million. Comments and data are requested on the economic impact of the proposed rule and of any suggested alternatives to the proposal. There are additional heat transfer systems and non-die-casting hydraulic systems that may be contaminated with PCB's. This rule would not authorize the use of such systems contaminated above 50 ppm. The number and location of such systems is unknown. Comments and data are requested on the number of such systems contaminated above 50 ppm; and the economic impact both of the existing prohibition and of complying with the proposed authorization for hydraulic systems if it were to be extended to these systems.

The presence of PCB's (in excess of 50 ppm) in certain blue and yellow pigments has been detected, but little is known concerning PCB concentration in these pigments or the extent of that contamination. Process refinements costing the industry about $500,000 are expected to be sufficient to control PCB contamination in blue pigments. It is not currently known, however, whether similar steps can be taken to reduce PCB contamination in the yellow pigments, of which annual sales are around $52 million. If this problem cannot be solved and the rule is not altered, there may be a significant impact on this industry. Comments and data are requested on the extent of PCB contamination, the economic impact of the proposed rule and of any suggested alternatives to the proposal.

The effect of the regulation on users of waste oil for road oiling may be substantial, although it is difficult to quantify. It is estimated that 300,000,000 gallons of waste oil are applied to roads every year. The high cost of testing this oil may mean that it will be economically infeasible under this rule to use waste oil for road oiling in the future. The use of possible substitute dust control agents, such as virgin oil or synthetic substitutes, could cost users as much as $100 million per year. However, this cost assumes that the substitute is applied at the same rate as is waste oil to achieve the same benefit. It is likely that this substantially overstates the cost because many people will cut back or eliminate road oiling as a result of the higher cost of substitutes. The cost of the rule will be borne in two ways: (1) Higher prices paid for road oil products; and (2) benefit forgone by those who will no longer oil roads as a result of higher costs. Comments and data are requested on the economic impact of the proposed rule and of any suggested alternatives to the proposal.

Approximately 200 electromagnets containing PCB's may currently be in use. This regulation would not authorize the use of these electromagnets. The absence of such an authorization may cost owners of these electromagnets about $4 million to replace them.

Most of the costs discussed above result from requirements that are part of the proposed authorizations to permit continued use of mixtures, articles and equipment containing PCB's in a manner protective of health and environment. If these proposed authorizations are not promulgated, the cost and economic impact on the affected industries could be considerably greater than the costs discussed above.

IX. Effective Date

It is the intent of EPA to make the final version of this proposed rule effective thirty days after the date of publication in the Federal Register. Promulgation of this regulation is not expected before October 1, 1978.

Dated: May 30, 1978.

Douglas M. Costle,
Administrator.

Official Record of Rulemaking—Proposed PCB "BAN" Regulations[2]

Section 19(a)(3) of TSCA defines the term "rulemaking record" for purposes of judicial review as follows:

"(A) The rule being reviewed under this section;

(B) In the case of a rule under section 4(a), the finding required by such section, in the case of a rule under section 5(b)(4), the finding required by such section, in the case of a rule under section 6(a) the finding required by section 5(f) or 6(a), as the case may be, in the case of a rule under section 6(a), the statement required by section 6(c)(1), and in the case of a rule under section 6(e), the findings required by paragraph 2(B) or 3(B) of such section, as the case may be;

(C) Any transcript required to be made of oral presentations made in proceedings for the promulgation of such rule;

(D) Any written submission of interested parties respecting the promulgation of such rule; and

(E) Any other information which the Administrator considers to be relevant to such rule and which the Administrator identified, on or before the date of the promulgation of such rule, in a notice published in the Federal Register."

In accordance with the requirements of section 19(a)(3)(E) quoted above, EPA is publishing the following list of documents constituting the record of this proposed rulemaking. A supplementary list or lists may be published any time on or before the date the final rule is issued. However, no such list will include public comments, the transcript of the rulemaking hearing, or submissions made at the rulemaking hearing or in connection with it. These documents are exempt from Federal Register listing under section 19(a)(3). A full list of these materials will be available on request from the Record and Hearing Clerk.

Support Documents

USEPA, OTS. *PCB Manufacturing, Processing, Distribution in Commerce and Use—Ban Regulation—Proposed Action—Support Document.*

Public comments, date of comments

Air Conditioning and Refrigeration Institute, July 18, 1977.
Australia, Department of Environment, Housing and Community Development, October 20, 1977.
Brown Co., July 13, 1977.
Cattell, Holly, September 21, 1977.
DePaul University, October 13, 1977.
Dry Color Manufacturers' Association, October 21, 1977.
General Electric Co., May 25, 1977.
General Motors Corp., July 18, 1977.
Schain, Anita, September 23, 1977.
Tennessee Valley Authority (TVA), July 15, 1977.
Tennessee Valley Authority (TVA), July 25, 1977.
W.S Water & Waste Water Systems, July 28, 1977.

Publicly Announced Meetings or Hearings

PUBLIC PARTICIPATION MEETING JULY 15, 1977

42 FR 32555, June 27, 1977. "Open Public Meeting: Solicitation of Comments." For July 15, 1977, Washington, D.C. and July 19, 1977 in Chicago, Ill.

USEPA. *Transcript of Proceedings Public Meeting on the Ban of Polychlorinated Biphenyls.* Washington, D.C., July 15, 1977.

USEPA. *Transcript of Proceedings in the Special Meeting of U.S. Environmental Protection Agency, Region V-Chicago, Ill.*, July 19, 1978.

DOCUMENTS SUBMITTED AT THE JULY 19, 1977 MEETING

Statement on Retrofilling Made at Public Meeting on the Implementation of the Environmental Protection Agency's Proposed PCB Ban. July 19, 1977. Dow Corning Corp.

Presentation to Environmental Protection Agency. Public Meeting—July 19, 1977. Joy Manufacturers.

List of Speakers.

List of EPA Panel Members for PCB Meeting.

Other Information

OTHER "FEDERAL REGISTER" NOTICES

42 FR 65264, December 30, 1977. "Policy for Implementation of Section 6(e)(2) of the

[2] Polychlorinated Biphenyls Marking and Disposal Official Record of Rulemaking is considered as part of the record of this rulemaking.

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Toxic Substances Control Act (TSCA) for Polychlorinated Biphenyls (PCB's)."

NON-FEDERAL REGISTER EPA STATEMENTS

USEPA, Region IV. News release re: Fishing in Lake Hartwell and Twelve Mile Creek in Pickens Co., South Carolina. September 10, 1976.

USEPA. Statements of the Honorable Russell E. Train, Admin., EPA Before the Subcommittee on Fisheries and Wildlife Conservation and the Environment Committee on Merchant Marine and Fisheries, House of Representatives, January 28, 1976.

USEPA. Remarks by the Honorable Russell E. Train, Admin., U.S.E.P.A. Prepared for Delivery at the National Conference on PCB's, Chicago, Ill., Wednesday, November 19, 1975. 10 a.m. EST *Environmental Protection. RX for Public Health.* Undated.

USEPA. *News Release.* September 14, 1976.

COMMUNICATIONS

Intragovernmental memoranda, letters, and other correspondence.

Other letters.

REPORTS

Bionomics Aquatic Toxicology Laboratory. *Fathead Minnow Egg and Fry Study, Summary Only.* August 26, 1977.

Dow Corning Corp. *Removal of PCB From Dow Corning 561 Silicone Transformer Liquid by Charcoal Filtration.* Undated.

General Electric Co. *Silicone in Transformers Presented to the Environmental Protection Agency.* September 6, 1977.

McGraw Hill. "PCB's spread by waste-oil use?" *Chemical Week.* January 25, 1978, p. 15.

Monsanto. "Monsanto to Shutdown PCB Unit, Exit Business by October 31, 1977." *News.* Undated.

National Electric Manufacturers Association. *Transformer Dielectric Fluid Study Working Group.* October 18, 1977.

National Swedish Environmental Protection Board. *PCB Conference II Stockholm, December 14, 1972.*

Peakall, D. B. "PCB's and Their Environmental Effects." CRC, *Critical Reviews in Environmental Control.* September 1976.

University of Wisconsin Sea Grant College. "ABC's of PCB's." *Public Information Report.* WIS SG 76-125.

University of Wisconsin Sea Grant College Progam, Institute for Environmental Studies. "PCB's and the FDA." *Earthwatch/Wisconsin.* Part I, May 6, 1977. Part II, May 13, 1977.

USDHEW. *Final Report of the Subcommittee on the Health Effects of Polychlorinated Biphenyls.* July 1976.

US-DOC, Maritime Administration Chemical Waste Incinerator Ship Project. *Final Environmental Impact Statement.* Volume 1 of 2.

USDOT, Transportation Systems Center. *Evaluation of Silicone Fluid for Replacement of PCB Coolants in Railway Industry.* Westinghouse Electric Corp. July 1977.

USEPA. Environmental Research Laboratory. Office of Research & Development. *Polychlorobiphenyls in Precipitation in the Lake Michigan Basin.* Draft. Undated.

USEPA, OPM. *Microeconomic Impacts of the Draft PCB "Ban" Regulation.* April 1978. Versar.

USEPA, OTS. *Development of a Study Plan for Definition of PCBs Usage, Wastes and Potential Substitution in the Investment Casting Industry. Task III.* January 1976. Versar. EPA 560/6-76-007.

USEPA. *Transcript of Proceedings. USA Environmental Protection Agency. In the matter of: Toxic Pollutant Effluent Standards Docket No. 1.* Arlington, Va. May. 8, 1974.

USEPA. *Transcript of Proceedings. USA Environmental Protection Agency. In the matter of: Toxic Pollutant Effluent Standards. Docket No. 1* FWPCA (307). Arlington, Va., Thursday, May 9, 1974.

USEPA. *Transcript of Proceedings USA Environmental Protection Agency. In the matter of: Toxic Pollutant Effluent Standards. Docket No. 1.* FWPCA (307). Arlington, Va., Monday, May 20, 1974.

Westinghouse Electric Corp. Proposal to: *The Department of Transportation Retrofilling of Railway Transformers.* December 21, 1977.

Witco Chemical, Golden Bear Division. *Coherex Dust Retardant Agent.*

World Health Organization. *Environmental Health Criteria 2. Polychlorinated Biphenyls and Terphenyls.* Geneva, 1976.

In addition, all reports and articles referenced in the USEPA OTS Support Document Voluntary Draft EIS are included in the Official Record. The record for the section 307 Water Effluent Standards for PCB's may be examined by the public at the Office of Hearing Clerk, Room 3708A, Environmental Protection Agency, 401 M Street SW., Washington, D.C. 20460.

Pursuant to the Toxic Substances Control Act (secs. 6, 8 and 12, (15 U.S.C. 2605, 2607, 2611)), the following amendments to 40 CFR Chapter I, Part 761 are proposed.

Subpart A—General

1. Section 761.1 is amended by revising paragraphs (a), (b), and (c) to read as follows:

§ 761.1 Applicability

(a) This part establishes prohibitions of, and requirements for, the manufacture for commercial purposes, processing for commercial purposes, distribution in commerce, use, disposal, storage, and marking of polychlorinated biphenyls (PCBs).

(b) This part applies to all persons who manufacture, process, distribute in commerce, use, or dispose of PCBs. Persons who manufacture, process, distribute in commerce, or use small quantities of PCBs solely for purposes of research and development are exempted from the requirements of Subpart D.

(c) The basic requirements applicable to disposal and marking of PCBs are set forth in Subpart B—Disposal of PCBs and Subpart C—Marking of PCBs. Prohibitions applicable to PCB activities are set-forth in Subpart D—Manufacture, Processing, Distribution in Commerce, and Use of PCBs. Subpart D also includes authorizations from the prohibitions. The Annexes in Subpart E set out the specific requirements for disposal and marking of PCBs pursuant to § 761.10 and § 761.20 and for the contingency plan for PCB spills pursuant to § 761.31. Definitions of terms used in all of these sections are in Subpart A.

2. In § 761.2 paragraphs (q) and (w) are revised, and paragraphs (bb) through (ll) are added as follows:

§ 761.2 Definitions.

* * * * *

(q) "PCB" and "PCBs" mean the following: "PCB Chemical Substance", "PCB Mixture", "PCB Article", "PCB Sealant, Coating, or Dust Control Agent", "PCB Equipment", and "PCB Container".

* * * * *

(w) "PCB Mixture" means any combination of chemical substances which contains 50 ppm (0.0050 percent on a dry weight basis) or greater of a PCB chemical substance and any combination of chemcial sustances which contains less than 50 ppm PCB chemical substance because of any dilution of a mixture containing 50 ppm or greater PCB chemical substance. This definition includes, but is not limited to, dielectric fluid and contaminated solvents, oils, waste oils, heat transfer fluids, other chemicals, rags, soil, paints, debris, sludge, slurries, dredge spoils, and materials contaminated as a result of spills.

* * * * *

(bb) "Manufacture *'for Commercial Purposes'* " means to manufacture:

(1) For distribution in commerce, including for test marketing purposes, or

(2) For use by the manufacturer, including for use as a chemical precursor.

(cc) "PCB Sealant, Coating, or Dust Control Agent" means any sealant, coating, of dust control agent that is made from any waste oil that contains any detectable amount of a PCB chemical substance less than 50 ppm (0.0050 percent on a dry weight basis). Any sealant, coating, or dust control agent that contains 50 ppm or greater of PCB is considered a PCB mixture.

(dd) "Process *'for Commercial Purposes'* " means to process:

(1) For distribution in commerce, including for test marketing purposes, or

(2) For use as a chemical precursor.

(ee) "Sale for Purposes Other than Resale" means sale of PCBs for purposes of research and development, for purposes of disposal, and for purposes of use. PCB equipment which is leased before July 1, 1979, for a period of no less than one year will be considered sold for purposes of resale. The sale will be considered to have occurred as of the date of the signing of the lease. Sale for purposes of use does not include sale for distribution in commerce. Sale for any other purpose is not sale for purposes other than resale.

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(ff) "Significant Exposure" means any exposure of human beings or the environment to PCB chemical substance or PCB mixture as measured or detected by any scientifically acceptable analytical method.

(gg) "Small Quantities for Research and Development" means any quantity of PCB chemical substance or PCB mixture which is originally packaged in one or more hermetically sealed containers of a volume of no more than five (5.0) milliliters and which is manufactured or processed only for purposes of scientific experimentation or analysis or chemical research on, or analysis of, PCBs, including research or analysis for the development of a product.

(hh) "Totally Enclosed Manner" means any manner that will ensure that any exposure of human beings or the environment to PCB chemical substance or PCB mixtures will be insignificant; that is, not measurable or detectable by any analytical method.

(ii) "Waste Oil" means waste products primarily derived from petroleum, which include, but are not limited to, fuel oils, motor oils, gear oils, cutting oils, transmission fluids, hydraulic fluids, and dielectric fluids.

Subpart B—Disposal of PCBs

3. Section 761.10(c)(1) is revised to read as follows:

§ 761.10 Disposal requirements.

* * * * * * *

(c) * * *

(1) PCB Transformers. (i) Any PCB transformers which contain dielectric fluid whose PCB concentration is 500 ppm or greater shall be disposed of in accordance with either of the following:

(A) In an incinerator which complies with Annex I; or

(B) In a chemical waste landfill which complies with Annex II: Provided, the transformer is first drained of all free flowing liquid, filled with solvent, allowed to stand for at least 18 hours, and then drained thoroughly. PCB mixtures which are removed shall be disposed of in accordance with paragraphs (a) and (b) of this section.

(ii) Any PCB transformer which contains dielectric fluid whose PCB concentration is less than 500 ppm but equal to or greater than 50 ppm PCB shall be disposed of in any manner, provided:

(A) the transformer is first drained of all free flowing liquid; and

(B) any dielectric fluid, except that disposed of in accordance with paragraph (b) of this section, shall be tested for PCB concentration and that information and data kept as a part of the records required by Annex VI. Dielectric fluid which contains 50 ppm or greater PCB shall be disposed of in accordance with paragraph (b) of this section. This paragraph (c)(1)(ii) does not apply to any transformer manufactured after January 1, 1979.

Subpart C—Marking of PCBs

4. Section 761.20(a)(1)(ii) and (a)(3)(i) are revised to read as follows:

§ 761.20 Marking requirements.

(a) * * *

(1) * * *

(ii) PCB transformers at the time of manufacture, at the time of distribution in commerce if not already labeled, and at the time of removal from use if not already labeled. PCB transformers containing dielectric fluid with a PCB chemical substance concentration less than 500 ppm but greater than or equal to 50 ppm (on a dry weight basis) are not required to be labeled.

* * * * * * *

(3) * * *

(i) all transformers not marked under paragraph (a)(1) of this section except for those PCB transformers that contain dielectric fluid with a PCB concentration less than 500 ppm PCB chemical substance (0.05 percent on a dry weight basis) are not required to be marked.

* * * * * * *

5. Subpart D is added as follows:

Subpart D—Manufacture, Processing, Distribution in Commerce, and Use of PCBs

761.30 Prohibitions.
761.31 Authorizations.
761.32 Exemptions [Reserved].

AUTHORITY.—Secs. 6, 8 and 12, Toxic Substances Control Act, 15 U.S.C. 2605, 2607, 2611.

Subpart D—Manufacturing, Processing, Distribution in Commerce, and Use of PCB's

§ 761.30 Prohibitions.

Except as provided in § 761.10 or as authorized in § 761.31, the activities listed in paragraphs (a), (b), and (c) of this section are prohibited pursuant to § 6(e) of TSCA. In addition, the Administrator hereby finds, under the authority of section 12(a) of TSCA, that the manufacture, processing, and distribution in commerce of PCB's for export from the United States presents an unreasonable risk of injury to health within the United States and to the environment of the United States. This finding is based upon the well documented human health and environmental hazard of PCB exposure, the high probability of human and environmental exposure from PCB manufacturing, processing, or distributing in commerce, the potential hazard of PCB exposure posed by the transportation of PCBs within the United States, and the evidence that PCB's contaminate the environment far from where they are used. In addition, the distribution in commerce and use (except servicing) of any intact, nonleaking PCB transformer (except those used in railroad locomotives or self-propelled cars) or capacitor is considered to be distribution in commerce and use in a totally enclosed manner.

(a) No person may manufacture for commercial purposes, process for commercial purposes, distribute in commerce, or use any PCB in any manner other than in a totally enclosed manner within the United States or manufacture, process, or distribute in commerce any PCB in any manner other than in a totally enclosed manner for export from the United States.

(b) Effective January 1, 1979, no person may manufacture for commercial purposes any PCB for use within the United States or for export from the United States.

(c) Effective July 1, 1979, no person may process for commercial purposes or distribute in commerce any PCB for use within the United States or for export from the United States, with the following exceptions:

(1) PCB's sold before July 1, 1979, for purposes other than resale may be distributed in commerce only in a totally enclosed manner after that date.

(2) PCB's sold after July 1, 1979, for purposes of disposal in accordance with the requirements of § 761.10 may be processed for commercial purposes for disposal and distributed in commerce for disposal.

§ 761.31 Authorizations.

The following nontotally enclosed PCB activities are authorized pursuant to sec. 6(e)(2)(B) of TSCA:

(a) Transformers—Use (servicing). PCB transformers not used in railroad locomotives or self-propelled cars may be serviced and the associated dielectric fluid may be serviced in a manner other than a totally enclosed manner until five years after the effective date of this rule subject to the following conditions:

(1) Servicing may be performed except servicing which requires that the transformer coil be removed from the transformer casing. The coils may be removed from those PCB transformers whose dielectric fluid contains less than 500 ppm PCB chemical substance (0.05 percent on a dry weight basis).

(2) Each person who services a PCB transformer shall develop and implement a plan for the control of PCB exposures and contamination in accordance with Annex VII. Any PCB chemical substance or PCB mixture which is used to service or repair a PCB transformer shall be stored in accordance

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with the storage for disposal requirements of Annex III.

(b) Transformers—Distribution in Commerce and Processing. Persons who service PCB transformers owned by others may distribute in commerce and process PCB dielectric fluid in a manner other than a totally enclosed manner only for the purpose of servicing existing PCB transformers until July 1, 1979, subject to the following conditions:

(1) Ninety days after the effective date of this rule, each persons who services PCB transformers owned by others with PCB dielectric fluid shall report to EPA his business address and the person to whom inquires should be directed. This report shall be sent to the Pesticides and Toxic Substances Enforcement Division (EN-342), Environmental Protection Agency, 401 M Street SW., Washington, D.C. 20460. Each person who services PCB transformers owned by others with PCB dielectric fluid shall keep a current record of tis inventory of PCB dielectric fluid, the serial number and owner of each PCB transformer serviced with PCB's, the date each PCB transformer is serviced with PCB's, and the nature of the servicing performed with PCB's. At its discretion, EPA may require a person who services PCB transformers owned by others with PCB dielectric fluid to submit a copy of his current record.

(2) Each report submitted to EPA shall contain the following certification:

I understand that I may assert a claim of business confidentiality my marking any part of all of this information as "TSCA Confidential Business Information" and that information so marked will not be disclosed except in accordance with the procedures set forth in 40 CFR Part 2. I further understand that if I do not mark this information as confidential, EPA may disclose it publicly without providing me notice of an opportunity to object.

I certify that to the best of my knowledge the contents of this report are accurate and complete.

Date _____
Signed _____
Position Title _____

The statement and certification above must be signed by the chief executive officer of the reporting organization or his designee.

(3) Each person who services PCB transformers owned by others with PCB dielectric fluid shall develop and implement a plan for the control of PCB exposures and contamination in accordance with Annex VII. Any PCB chemical substance or PCB mixture which is used to service or repair a PCB transformer shall be stored in accordance with the storage for disposal requirements of Annex III.

NOTE.—Persons who own and who service their own PCB transformers with PCB dielectric fluids are considered to be using the PCB dielectric fluid and are therefore covered under the authorization in paragraph (a). Persons who service PCB transformers owned by others with PCB dielectric fluid are considered to be distributing that fluid in commerce since they are selling that dielectric fluid to the transformer owner and therefore are subject to paragraph (b). Such persons must petition yearly for an exemption. If servicing of a PCB transformer by a nonowner involved the use of a non-PCB dielectric fluid (e.g., topping-off with a non-PCB fluid), that servicing is a use covered under paragraph (a).

(c) *Railroad Transformers—Use.* (1) Transformers containing PCB mixtures may be used in a manner other than a totally enclosed manner in railroad locomotives and self-propelled cars (referred to as "railroad transformers") until five years after the effective date of this rule subject to the following conditions:

(i) Fifteen months after the effective date of this rule, no railroad transformer may contain dielectric fluid whose concentration of PCB chemical substance exceeds 40,000 ppm (four percent on a dry weight basis).

(ii) Three years after the effective date of this rule no railroad transformer may contain dielectric fluid whose concentration of PCB chemical substance exceeds 1,000 ppm (0.10 percent on a dry weight basis).

(iii) The concentration of PCB's in the dielectric fluid contained in railroad transformers shall be measured:

(A) Immediately upon completion of any authorized servicing of a PCB transformer intended to reduce the PCB concentration in the dielectric fluid in the transformer, and

(B) Between 12 and 24 months after each servicing conducted in accordance with paragraph (c)(iii)(A) of this section.

(iv) Ninety days after the effective date of this rule each person who owns a railroad transformer shall report to EPA, and retain records of, the number of PCB railroad transformers which he owns and the liquid volume of each railroad transformer. This report shall be sent to the Pesticides and Toxic Substances Enforcement Division (EN-342), Environmental Protection Agency, 401 M Street SW., Washington, D.C. 20460. Each person shall also keep a current record of the dates and nature of each servicing of each PCB transformer and the measured concentration of PCB in each transformer as required by paragraph (c)(1)(iii) of this section. At its discretion, EPA may require a person who owns a railroad transformer to submit a copy of his current record.

(v) Ninety days after the effective date of this rule each person who services PCB transformers owned by others with PCB dielectric fluid shall report to EPA his business address and the person to whom inquiries should be directed. This report shall be sent to the Pesticides and Toxic Substances Enforcement Division (EN-342), Environmental Protection Agency, 401 M Street SW., Washington, D.C. 20460. Each person who services PCB transformers owned by others with PCB dielectric fluid shall keep a current record of his inventory of PCB dielectric fluid, the serial number and owner of each PCB transformer serviced with PCB's, the date each PCB transformer is serviced with PCB's, and the nature of the servicing performed with PCB's. At its discretion, EPA may require a person who services PCB transformers owned by others with PCB dielectric fluid to submit a copy of his current record.

(vi) Each report submitted to EPA under paragraphs (c)(1) (iv) and (v) of this section shall contain the certification found in § 761.31(b)(2).

(vii) Each person who uses or services a PCB railroad transformer shall develop and implement a plan for the control of PCB exposures and contamination in accordance with Annex VII. Any PCB chemcial substance or PCB mixture which is used to service or repair a PCB railroad transformer shall be stored in accordance with the storage for disposal requirements of Annex III.

(2) Railroad transformers containing PCB mixtures may be serviced and beginning 15 months after the effective date of this rule shall be serviced subject to the conditions of paragraph (c)(1) of this section, in the following manner:

(i) If a railroad transformer is drained, flushed, or refilled, non-PCB dielectric fluid shall be used for refilling unless the original fluid has been processed in accordance with paragraph (c)(1)(ii) of this section after its removal from the transformer. PCB fluids shall be disposed of in accordance with the requirements of § 761.10.

(ii) Filtration through activated carbon or any other method may be used for the purpose of reducing residual PCB concentrations in railroad transformer dielectric fluid.

(iii) Railroad transformers may be rebuilt or serviced using only non-PCB dielectric fluid.

(d) Mining equipment-use. Continuous miner-type and loader-type mining equipment containing PCB motors may be used and these motors topped-off with PCB fluid in the field in a nontotally enclosed manner until December 31, 1981, subject to the following conditions:

(1) PCB motors in loader-type equipment shall be rebuilt as air-cooled motors or replaced with non-PCB motors at the time the motor is returned to a service shop for servicing.

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The rebuilt motors may not contain any PCBs.

(2) PCB motors in continuous miner-type equipment may not be rebuilt as PCB motors after 12 months after the effective date of this rule.

(3) Ninety days after the effective date of this rule each person who owns PCB mining equipment shall report to EPA, and retain records of, the type and quantity of equipment owned containing PCB motors, the serial number of each PCB motor, the number of PCB motors in his inventory, and the amount of PCB heat transfer fluid in his inventory. This report shall be sent to the Pesticides and Toxic Substances Enforcement Division (EN-342), Environmental Protection Agency, 401 M Street SW., Washington, D.C. 20460. Each person who owns PCB mining equipment shall also keep a current record of the date that each PCB motor is rebuilt as an air-cooled motor. If any of the PCB mining equipment is sold, the transaction and the parties thereto shall be reported to EPA by the seller. At its discretion, EPA may require a person who owns PCB mining equipment to submit a copy of his current record.

(4) Each report submitted to EPA under paragraph (d)(3) of this section shall contain the certification found in § 761.31(b)(2).

(5) Each person who uses or services PCB mining equipment shall develop and implement a plan for the control of PCB exposures and contamination in accordance with annex VII. Any PCB chemical substance or PCB mixture which is used to service or repair PCB mining equipment shall be stored in accordance with the storage for disposal requirements of annex III.

(e) Mining equipment—Distribution in commerce and processing. Persons who service continuous miners motors owned by others which contain PCB fluid may distribute in commerce and process PCB fluid in a manner other than a totally enclosed manner only for the purpose of servicing these continuous miner motors until July 1, 1979, subject to the following conditions:

(1) Ninety days after the effective date of this rule each person who services continuous miner motors owned by others with PCB fluid shall report to EPA his business address and the person to whom inquiries should be directed. This report shall be sent to the Pesticides and Toxic Substances Enforcement Division (EN-342), Environmental Protection Agency, 401 M Street SW., Washington, D.C. 20460. Each person who services continuous miner motors owned by others with PCB fluid shall keep a current record of his inventory of PCB fluid, the serial number and owner of each continuous miner motor serviced, the date each continuous miner motor is serviced, and the nature of the servicing performed. At its discretion, EPA may require a person who services continuous miner motors owned by others with PCB fluid to submit a copy of his current record.

(2) Each report submitted to EPA under paragraph (e)(1) of this section shall contain the certification found in § 761.31(b)(2).

(3) Each person who services continuous miner motors owned by others with PCB fluid shall develop and implement a plan for the control of PCB exposures and contamination in accordance with annex VII. Any PCB chemical substance or PCB mixture which is used to service or repair continuous miner motors shall be stored in accordance with the storage for disposal requirements of annex III.

NOTE.—Persons who service continuous miner motors owned by others with PCB fluid are considered to be distributing that fluid in commerce since they are selling that fluid to the continuous miner owner and therefore are subject to paragraph (e). Such persons must petition for an exemption to continue this activity after June 30, 1979.

(f) Hydraulic die casting systems-use.—(1) Hydraulic die casting systems containing PCB mixtures may be used and serviced in a manner other than a totally enclosed manner until five years after the effective date of this rule subject to the following conditions:

(i) Each person who owns a hydraulic die casting system which ever contained PCB hydraulic fluid shall test for the concentration of PCB's in the hydraulic fluid no later than 90 days after the effective date of this rule and at 6-month intervals or less beginning 1 year after the effective date of this rule. If a system's fluid contains greater than 50 ppm PCB chemical substance (0.0050 percent on a dry weight basis), the system shall be drained of the PCB mixture and refilled with non-PCB fluid or with fluid containing less than 50 ppm PCB within 1 year of the effective date of this rule and within 10 days after any subsequent test of the PCB concentration of the fluid which shows the PCB concentration equals or exceeds 50 ppm. PCB mixtures shall be disposed of in accordance with the requirements of § 761.10.

(ii) The requirements of paragraph (f)(1)(i) may be discontinued for a particular system after two consecutive tests of samples taken no less than 3 months apart show that the PCB concentration in that system is less than 50 ppm. If it is subsequently determined that the PCB concentration in such a system exceeds 50 ppm, that system shall then be subject to the requirements of paragraph (f)(1)(i) of this section until the PCB concentration is reduced to below 50 ppm for two consecutive tests of samples taken no less than three months apart.

(iii) Ninety days after the effective date of this rule each person who owns a hydraulic die casting system that ever contained a PCB mixture shall report to EPA, and retain records of, the number of systems he owns containing PCB mixtures, the type of each system, and the PCB concentration of the hydraulic fluid contained in each system. This report shall be sent to the Pesticides and Toxic Substances Enforcement Division (EN-342), Environmental Protection Agency, 401 M Street SW., Washington, D.C. 20460. Each person who owns a hydraulic die casting system that contains a PCB mixture shall also keep a current record of the dates of each draining or refilling and the measured PCB concentration of the hydraulic fluid in the refilled system on those dates for each system. If any system is sold, the transaction and the parties thereto shall be reported to EPA by the seller. At its discretion, EPA may require the submission of a copy of a person's current record.

(iv) Each report submitted to EPA under paragraph (f)(1)(iii) of this section shall contain the certification found in § 761.31(b)(2).

(v) Each person who owns a hydraulic die casting system that contains a PCB mixture or who services systems or fluid that contain PCBs shall develop and implement a plan for the control of PCB exposure and contamination in accordance with annex VII. Any PCB chemical substance or PCB mixture which is stored for use or servicing shall be stored in accordance with the storage for disposal requirements of annex III.

(2) Hydraulic die casting systems that contain PCB mixtures may be used and serviced subject to the conditions in paragraph (f)(1) of this section in the following manner:

(i) Hydraulic fluid containing PCB chemical substance concentrations equal to, or greater than, 50 ppm in die casting systems may be drained from the system for the purpose of reducing the PCB concentration or for disposal. PCB mixtures shall be disposed of in accordance with the requirements of § 761.10.

(ii) Hydraulic die casting systems may be flushed and refilled with any fluid that contains less than 50 ppm PCB chemical substance.

(iii) Hydraulic fluid removed from hydraulic die casting systems that contains 50 ppm PCB chemical substance, or greater, may be filtered, distilled, or otherwise serviced to reduce the PCB chemical substance concentration below 50 ppm.

(g) Carbonless copy paper-use. Carbonless copy paper containing PCBs may be used in a manner other than a totally enclosed manner until 5 years after the effective date of this rule.

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Subpart E—List of Annexes

6. Subpart E is amended by adding annex No. VII consisting of § 761.46 as follows:

ANNEX VII

§ 761.46 PCB exposure and contamination control plans.

(a) The purpose of a PCB exposure and contamination control plan (PCB ECCP) is to help insure that risks associated with activities either authorized by or exempted from requirements of this regulation are minimal. The plan will require delineation of all steps and processes involved in an authorized or exempted activity and will include requirements for notification of proper authorities and basic steps for response to releases, such as spills, of PCB's. Specifically, each PCB ECC plan shall contain the following information:

(1) A written operations plan that describes step-by-step procedures to be followed in the performance of an authorized PCB activity. The plan shall be designed in an appropriate style and format to inform and instruct the person expected to be performing the PCB activity. Elements to be included in the operations plan are:

(i) Procedures for assembling and testing equipment and apparatus such as piping, hoses, pumps, valves, fittings, etc., in a manner that will prevent failures, leaks, spills, or other incidents that could result in the release of PCB's from the apparatus.

(ii) Procedures for operating any equipment or apparatus or process in a manner that will prevent failures, leaks, spills, or other incidents that could result in the release of PCB's. These procedures shall include the use of catch or drip pans and any other devices that will prevent the loss of any PCB's during the operations including such operations as removing pipes or hoses or operating valves or filling containers. Procedures minimizing worker exposure to PCB's during all phases of the operation shall be included.

(iii) Procedures for preventing any releases of PCB's that occur from failures not prevented by paragraphs (a)(1)(i) or (ii) of this section from leaving the immediate work area. These procedures shall include such steps as controlling drainage systems so that PCB's cannot escape from the drainage controls in the event of a PCB release during the servicing operation. These drainage system controls could include provisions such as temporarily plugging roof drains during PCB servicing operations on tops of buildings or curbing or diking PCB work areas to provide containment of PCB's. In developing these procedures, an analysis shall be made of the routes that a PCB release could follow and the potential environmental risks that PCB contamination of these routes pose. PCB releases that go directly to surface or ground water pose the greatest risk, followed by imminent threats to surface or ground water, land contamination in areas where humans or significant animal populations could be exposed, croplands, land and areas that could contribute to significant airborne movements of PCB's. The operations plan should be especially directed to those situations where the above analysis shows the highest risk.

(2) A response and control plan that described step-by-step procedures to be followed when a release of PCB's occurs at a PCB use or servicing operation. The plan shall include procedures for incidents that range from releases of PCB's that are captured in drip pans to much greater releases, such as loss of the entire contents of a PCB transformer with some or all of the loss escaping the controls established in the operations plan. Elements to be included in the response plan are:

(i) Procedures for notifying appropriate individuals and organizations of a release of PCB's. These procedures shall include the following:

(A) The name of the person(s) responsible for coordinating responses to PCB incidents (designated by the servicing and/or using organization).

(B) Communication systems established on a 24-hour per day basis to permit expeditious notifications.

(C) The U.S. Coast Guard National Response Center, telephone No. 800-424-8802.

(D) The Regional EPA Emergency Response Center in the region in which the release occurs.

(E) State and local government pollution control authorities and any appropriate emergency response centers.

(F) Persons indicated in paragraph (a)(1)(i)(A) of this section shall be notified and shall retain records at all releases of PCB's. All releases or discharges that escape from the immediate work area shall be reported to all persons and organizations in paragraphs (a)(1)(i)(A)-(E) of this section. In addition, all reporting requirements of 40 CFR 118, the TSCA § 8(e) policy statement for reporting of toxics incidents (43 FR 11110, March 16, 1978), and any other Federal, State, or local reporting requirements must be met.

(ii) Procedures for controlling, mitigating, and cleaning up any releases of PCB's. Such procedures shall include the following:

(A) The location and the proper use of PCB containers for any collected residues of PCB chemical substances, mixtures, debris, sorbents, rags, etc.

(B) The location of tools, apparatus, and supplies for containing pumping and transfering, and/or sorbing any PCB's released from any PCB servicing operations. Such tools, apparatus, and supplies must be immediately available at the PCB servicing site. Such apparatus must be sufficient to transfer the liquid contents of a damaged article, such as a transformer, or a damaged container so that a discharge or release can be stopped or the imminent risk of a discharge or release can be prevented by such a transfer. Transfers shall be made in appropriate containers.

(C) Prearranged plans for transporting and disposing of any PCB wastes or residues at approved PCB disposal sites.

(D) Procedures for removing, containing, transporting, and disposing of large quantities of soil contaminated by a PCB release or discharge.

(E) Written instructions and a program of direct training on at least a semi-annual basis for all procedures, equipment, apparatus, tools, or supplies that could be expected to be used in a PCB exposure and contamination control plan.

(b) A copy of the ECC plan shall be available in each of the following locations:

(1) With the spill prevention, control, and countermeasure (SPCC) plan as required by 40 CFR 111.

(2) In the office for the facility where the servicing is being performed and with other PCB files at the principal office of the servicing organization.

(3) With each group of employees as they perform the actitivies that may result in an exposure or a contamination incident.

(c) No PCB activity authorized by this rule is permitted unless the PCB ECC plan has been reviewed and certified by a registered professional engineer. The engineer shall attest that the PCB contingency plan has been prepared in accordance with good engineering practice and that the plan complies with the provisions of paragraphs (a) and (b) of this section. However, this certification is not determinative of the plan's adequacy. At its discretion, EPA may review the plan or require a person to demonstrate that his plan meets the requirements of paragraphs (a) and (b) of this section. If EPA finds that a plan does not conform to good engineering practice, or if EPA finds that a person is not implementing any provision of the plan, EPA may take any of the following actions:

(1) EPA may require that a plan acceptable to EPA be written and implemented.

(2) EPA may suspend a person's PCB authorization until a plan acceptable to EPA is written and implemented.

(3) EPA may enjoin future conduct which may present an unreasonable risk of a PCB exposure or contamination incident.

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