ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 761

[OPTS 62051; FRL 3179-1]

Polychlorinated Biphenyls Spill Cleanup Policy

AGENCY: Environmental Protection Agency (EPA).

ACTION: TSCA PCB spill cleanup pc rule.

SUMMARY: This rule presents the T Substances Control Act (TSCA) po for the cleanup of spilled polychlorinated biphenyls (PCBs). TSCA policy establishes the meas which EPA considers to be adequa cleanup for the majority of situatio where PCB contamination occurs c activities regulated under TSCA. V cleanup in accordance with this pc constitutes adequate cleanup of sp within the scope of this policy and creates a presumption against enforcement for penalties or further cleanup. EPA will not exercise enforcement abeyance for a disposal violation if the spill was the result of gross negligence or knowing violation.

Since this rule is a policy statement, it does not require notice and comment under the provisions of the Administrative Procedures Act. However, the Agency welcomes comment on and additional relevant information about the TSCA policy.

DATE: The TSCA policy shall be effective on May 4, 1987.

ADDRESSES: Information or comments for consideration by the Agency should be submitted in triplicate to: TSCA Public Information Office (TS-793), Office of Toxic Substances, Environmental Protection Agency, Rm. C004 NE Mall, 401 M St., SW., Washington, DC 20460.

Information and comments should include the docket number OPTS-62051. Information and comments received in connection with this document will be available for reviewing and copying from 8 a.m. to 4 p.m., Monday through Friday, excluding legal holidays, in Rm. C004 NE Mall, Environmental Protection Agency, 401 M St., SW., Washington, DC.

FOR FURTHER INFORMATION CONTACT: Edward A. Klein, Director, TSCA Assistance Office (TS-799), Office of Toxic Substances, Environmental Protection Agency, Rm. E-543, 401 M St., SW., Washington, DC 20460, (202-554-1404).

SUPPLEMENTARY INFORMATION:

Contents of Preamble

I. Background

EPA regulations controlling the disposal of PCBs, promulgated in the Federal Register of February 17, 1978 (43 FR 7150) and May 31, 1979 (44 FR 31514), broadly define the term "disposal" to encompass accidental as well as intentional releases of PCBs to the environment. Under these regulations, EPA considers intentional, as well as unintentional, spills, leaks and other uncontrolled discharges of PCBs at concentrations of 50 parts per million (ppm) or greater (defined by the concentration of PCBs in the material which spills) to be improper disposal of PCBs. For purposes of this discussion, and as defined in this policy under Unit III, the term "Spill" means spills, leaks, or other uncontrolled discharges of PCBs where the release results in any quantity of PCBs running off or about to run off the surface of the equipment or other PCB source, as well as the contamination resulting from those releases. When PCBs are improperly disposed of as a result of a spill of material containing 50 ppm or greater PCBs, EPA has the authority under section 17 of TSCA to compel persons to take actions to rectify damage or clean up contamination resulting from the spill.

Policies for the cleanup of PCB spills are currently established separately by each EPA regional office, and owners of spilled PCBs are required to meet these standards or face potential penalties under TSCA section 16 for improper disposal of PCBs. Once cleanup occurs to the standard set by the EPA regional offices, the material which has been cleaned, e.g., soil, metal, or equipment, may be processed, distributed in commerce and used (unless the regional office has placed restrictions on these other activities).

EPA standards for the cleanup of spilled PCBs have been established at the EPA regional office level since 1978. Each region sets PCB cleanup standards in the form of general guidelines and then applies the general guidelines on a case-by-case basis for specific spill situations. The general guidelines and their application to spills have differed among regions. For certain spill situations, regions have required cleanup to 50 ppm PCBs. In other spill situations, regions have required cleanup to preexisting background levels or the limit of detection of PCBs.

For PCB spill cleanup, EPA has already in place certain requirements for timely cleanup. In the final PCB Electrical Equipment Rule, published in the Federal Register of August 25, 1982 (47 FR 37342), EPA requires the initiation of PCB Transformer spill cleanup within 48 hours of spill discovery and defines disposal specifically to include leaks, spills, and other unintentional discharges of PCBs. However, the PCB Electrical Equipment Rule did not establish numerical criteria for PCB spill cleanup.

Most recently, the regions have applied the "lowest practicable level" guideline set up in the January 27, 1984, Administrative Law Judge decision on *General Electric* v. *U.S.E.P.A.* The Agency has, however, experienced several areas of difficulty in applying the "lowest practicable level" approach. First, the guideline is subject to, and has resulted in, disparate interpretations. Second, the term "lowest practicable level" cannot be easily applied by the regulated community without guidance from EPA. This can delay cleanup, and delays in cleanup can result in prolonged exposures to humans and more widespread environmental contamination. Finally, the owner of the PCBs may disagree with the EPA regional office's interpretation of the "lowest practicable level" standard. This may occur when the EPA regional office interpretation would require more stringent and costly measures than the owner believes are warranted. This too can delay complete cleanup, as the application of this guideline has, in fact, led to protracted Agency actions in some cases.

Although EPA did not finalize the proposed PCB spill cleanup policy in 1982, EPA has continued to evaluate available information on the risks posed by spilled PCBs and the costs associated with cleanup to various levels. EPA recognized that setting a nationwide TSCA PCB cleanup policy was a desirable goal and in the winter of 1984 EPA produced a draft TSCA Compliance Monitoring Program Policy covering PCB spill cleanup. Although the 1984 draft policy was never officially released, the members of the press and the public acquired and reviewed the draft policy. The Environmental Defense Fund (EDF), Natural Resources Defense Council (NRDC), Edison Electric Institute (EEI), Chemical Manufacturers Association (CMA), and National Electrical Manufacturers Association (NEMA), among others, were principal reviewers of the 1984 draft policy.

On May 17, 1985 EDF, NRDC, EEI, CMA, and NEMA submitted to EPA an alternative PCB spill cleanup policy for consideration by the Agency. EPA viewed the Consensus Agreement as a framework for completing its nationwide TSCA policy and evaluated the Consensus Agreement as a source of information in developing the Agency's own policy. The Agency and the Consensus Group shared two general principles about the appropriate framework for a nationwide PCB spills cleanup policy: That the policy should establish requirements designed to be effective in the large majority of spill situations; and that the risks posed by residual contamination (PCBs remaining after cleanup) vary depending upon the location of the spill and the potential for human exposures.

The requirements and standards in this policy are based upon the Agency's evaluation of the potential routes of exposure and potential risks associated with the more common types of PCB spills, as well as the costs associated with cleanup following these more common types of spills. Typical PCB spills involve the limited release of PCBs during the course of EPA-authorized activities such as: The use of electrical equipment (e.g., transformers and capacitors), the servicing of electrical equipment, and the storage for disposal of PCBs.

In establishing this cleanup policy for typical PCB spills, EPA recognizes that the risks posed by spills of PCBs vary, depending upon spill location and the amount of PCBs spilled. EPA recognized this earlier, in both the August 25, 1982 PCB Electrical Equipment Rule and the July 17, 1985 PCB Transformer Fires Rule. In these rules, EPA placed more stringent requirements on higher concentration PCBs located in areas where their release would pose greatest potential for significant human exposure.

This TSCA policy requires cleanup of PCBs to different levels depending upon spill location, the potential for exposure to residual PCBs remaining after cleanup, the concentration of the PCBs initially spilled (i.e., PCBs spilled from PCB-contaminated equipment versus PCBs spilled from PCB equipment), and the nature and size of the population potentially at risk of exposure. Thus, this policy applies the most stringent requirements for PCB spill cleanup to areas where there is the greater potential for human exposures to spilled PCBs. The policy applies less stringent requirements for cleanup to PCB spills in areas where the type and degree of contact present lower potential exposures. Finally, even less stringent requirements apply to areas where there is little potential for any direct human exposures.

EPA firmly believes that by providing uniform, predictable requirements across the regions for the majority of spill situations, the nationwide policy will reduce the risks posed by spills of PCBs by encouraging rapid and effective cleanup and restoration of the site.

Unit VII of this document discusses available information and the rationale for the policy based upon that information. The policy reflects the Agency's best judgment in light of available information. However, the Agency welcomes comment on, and additional relevant information about, the TSCA policy as the Agency intends to continue to consider comments and evaluate information on the issue of PCB spills cleanup. Should the Agency's evaluation show that new information, or practical considerations associated with the implementation of the policy, warrant changes in, or modifications to, the policy, the policy will be revised accordingly by EPA headquarters. Thus, a public docket has been established to collect comments and information. The Agency believes that much of the data currently lacking can be developed only over a period of time and experience in implementing the policy. Therefore, EPA has not placed a time limit on the submission of comments.

Finally, the Agency intends to re-examine in 12 to 18 months the need to promulgate regulations requiring cleanup in accordance with Agency standards. The Agency's decision on the need to promulgate regulations will be based on two primary considerations. First, EPA will consider whether the issuance of the policy has in fact resulted in the application of consistent nationwide standards to PCB spill cleanup. Second, EPA will consider its experience in enforcing provisions of this policy with particular emphasis on the results of any litigation brought by the Agency for improper PCB disposal from leaks or spills.

II. Scope of the Policy

This policy establishes requirements for the cleanup of spills resulting from the release of materials containing PCBs at concentrations of 50 ppm or greater. The policy applies to spills which occur after the effective date of this policy.

Existing spills (spills which occurred prior to the effective date of this policy) are excluded from the scope of this policy for two reasons: (1) For old spills which have already been discovered, this policy is not intended to require additional cleanup where a party has already cleaned a spill in accordance with requirements imposed by EPA through its regional offices, nor is this policy intended to interfere with ongoing litigation of enforcement actions which bring into issue PCB spills cleanup; and (2) EPA recognizes that old spills which are discovered after the effective date of this policy will require site-by-site evaluation because of the likelihood that the site involves more pervasive PCB contamination than fresh spills and because old spills are generally more difficult to clean up than fresh spills (particularly on porous surfaces such as concrete). Therefore, spills which occurred before the effective date of this policy are to be decontaminated to requirements established at the discretion of EPA, usually through its regional offices.

EPA expects the large majority of PCB spills subject to the TSCA PCB regulations to conform to the typical spill situations considered in developing this policy. However, this policy does exclude from application of the final numerical cleanup standards certain spill situations: Spills directly into surface water, drinking water, sewers, grazing lands, and vegetable gardens. While these spills are subject to the notification requirements and to measures designed to minimize further environmental contamination (see Unit IV.A.), final cleanup standards for these types of spills are to be established at the discretion of the EPA regional offices.

For all other spills, EPA generally expects the final decontamination standards of this policy to apply. Occasionally, some small percentage of spills covered by this policy may

warrant different or more stringent cleanup requirements because of additional routes of exposure or significantly greater exposures than those assumed in developing the final cleanup standards of this policy.

There may also be exceptional spill situations that require less stringent cleanup, or a different approach to cleanup, due to factors associated with the particular spill. These factors may mitigate expected exposures and risks or make cleanup to these requirements impracticable.

A. Excluded Spills

Although the following six spill situations are excluded from the automatic application of final numerical decontamination standards of Units IV.B and C, the general requirements under Unit IV.A do apply to these spills. In addition, all of these excluded situations require practicable, immediate actions to contain the area of contamination. While these situations may not always require more stringent cleanup measures, the Agency is excluding these situations because they will always involve significant factors that may not be adequately addressed by cleanup standards based upon typical spill characteristics.

For the following six spill situations, the responsible party shall decontaminate the spill in accordance with site-specific requirements established by the EPA regional offices:

1. Spills that result in the direct contamination of surface waters (surface waters include, but are not limited to, "waters of the United States" as defined in 40 CFR Part 122, ponds, lagoons, wetlands, and storage reservoirs).

2. Spills that result in the direct contamination of sewers or sewage treatment systems.

3. Spills that result in the direct contamination of any private or public drinking water sources or distribution systems.

4. Spills which migrate to and contaminate surface waters, sewers, or drinking water supplies before cleanup has been completed in accordance with this policy.

5. Spills that contaminate animal grazing lands.

6. Spills that contaminate vegetable gardens.

B. Spill Situations Within the Scope of the Policy That May Warrant More Stringent Cleanup Levels

For spills within the scope of this policy, EPA generally retains the authority to require additional cleanup upon finding that, despite good faith efforts by the responsible party, the numerical decontamination levels in the policy have not been met (see discussion in Unit VI). In addition, EPA foresees the possibility of exceptional spill situations in which site-specific risk factors may warrant additional cleanup to more stringent numerical decontamination levels than are required by the policy. In these situations, the Regional Administrator has the authority to require additional cleanup upon finding, based upon the specific facts of the spill, that further cleanup must occur to prevent unreasonable risk. Before making a final decision on additional cleanup, the Regional Administrator will notify the Director of the Office of Toxic Substances of his finding and the basis for the finding.

For example, site-specific characteristics such as short depth to ground water, type of soil, or the presence of a shallow well may pose exceptionally high potential for ground water contamination by PCBs remaining after cleanup to the standards specified in this policy. Spills that pose such a high degree of potential for ground water contamination have not been excluded from the policy under Unit II.A.1 because the presence of such potential may not be readily apparent. EPA feels that automatically excluding such spills from the scope of the policy could result in the delay of cleanup—a particularly undesirable outcome if potential ground water contamination is in fact a significant concern.

C. EPA Flexibility To Allow Less Stringent or Alternative Requirements

EPA retains the flexibility to allow less stringent or alternative decontamination measures based upon site-specific considerations. EPA will exercise this flexibility if the responsible party demonstrates that cleanup to the numerical decontamination levels is clearly unwarranted because of risk-mitigating factors, that compliance with the procedural requirements or numerical standards in the policy is impracticable at a particular site, or that site-specific characteristics make the costs of cleanup prohibitive.

The Regional Administrator will notify the Director of OTS of any decision (and the basis for that decision) to all less stringent cleanup. The purpose of this notification is to enable the Director of OTS to ensure consistency in standards for spill cleanup under special circumstances across the regions.

D. The Relationship of This Policy to Other Statutes

This policy does not affect cleanup standards or requirements for the reporting of spills imposed, or to be imposed, under other Federal Statutory authorities, including but not limited to, the Clean Water Act (CWA), the Resource Conservation and Recovery Act (RCRA), and the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA). Where more than one requirement applies, the stricter standard must be met.

The Agency recognizes that the existence of this policy will inevitably result in attempts to apply the standards to situations within the scope of other statutory authorities. However, other statutes require the Agency to consider different or alternative factors in determining appropriate corrective actions. In addition, the types and magnitudes or exposures associated with sites requiring corrective action under other statutes often involve important differences from those expected of the typical, electrical equipment-type spills considered in developing this policy. Thus, cleanups under other statutes, such as RCRA corrective actions or remedial and emergency response actions under SARA, may result in different outcomes.

III. Definitions

For purposes of this policy, certain words and phrases are used to denote specific materials, procedures, or circumstances. The following definitions are provided for purposes of clarity and are not to be taken as exhaustive lists of situations and materials covered by the policy.

1. *PCBs.* The term means polychlorinated biphenyls as defined in 40 CFR 761.3. As specified in 40 CFR 761.1(b), no requirements may be avoided through dilution of the PCB concentration.

2. *Low-concentration PCBs.* The term means PCBs that are tested and found to contain less than 500 ppm PCBs, or those PCB-containing materials which EPA requires to be assumed to be at concentrations below 500 ppm (i.e., untested mineral oil dielectric fluid).

3. *High-concentration PCBs.* The term means PCBs that contain 500 ppm or greater PCBs, or those materials which EPA requires to be assumed to contain 500 ppm or greater PCBs in the absence of testing.

4. *Spill.* The term as used in this policy means both intentional and

unintentional spills, leaks, and other uncontrolled discharges where the release results in any quantity of PCBs running off or about to run off the external surface of the equipment or other PCB source, as well as the contamination resulting from those releases. This policy applies to spills of 50 ppm or greater PCBs. The concentration of PCBs spilled is determined by the PCB concentration in the material spilled as opposed to the concentration of PCBs in the material onto which the PCBs were spilled. Where a spill of untested mineral oil occurs, the oil is presumed to contain greater than 50 ppm, but less than 500 ppm PCBs, and is subject to the relevant requirements of this policy.

5. *Residential/commercial areas.* Residential/commercial areas are those areas where people live or reside, or where people work in other than manufacturing or farming industries. Residential areas include housing and the property on which housing is located, as well as playgrounds, roadways, sidewalks, parks and other similar areas within a residential community. Commercial areas are typically accessible to both members of the general public and employees and include public assembly properties, institutional properties, stores, office buildings, and transportation centers.

6. *Outdoor electrical substations.* Outdoor electrical substations are outdoor, fenced-off, and restricted access areas used in the transmission and/or distribution of electrical power. Outdoor electrical substations restrict public access by being fenced or walled off as defined at 40 CFR 761.30(1)(1)(ii). For purposes of this TSCA Policy, outdoor electrical substations are defined as being located at least 0.1 kilometer (km) from a residential/commercial area. Outdoor fenced-off and restricted access areas used in the transmission and/or distribution of electrical power which are located less than 0.1 km from a residential/commercial area are considered to be residential/commercial areas.

7. *Other restricted access (nonsubstation) locations.* Other restricted access (nonsubstation) locations are areas other than electrical substations that are at least 0.1 km from a residential/commercial area and limited by man-made barriers (e.g., fences and walls) or substantially limited by naturally occurring barriers such as mountains, cliffs, or rough terrain. These areas generally include industrial facilities and extremely remote rural locations. (Areas where access is restricted but are less than 0.1 km from a residential/commercial area are considered to be residential/commercial areas.)

8. *Nonrestricted access areas.* A nonrestricted access area is any area other than restricted access, outdoor electrical substations, and other restricted access locations, as defined in paragraphs 5 and 6 of this unit. In addition to residential/commercial areas, these areas include unrestricted access rural areas (areas of low-density development and population where access is uncontrolled by either man-made barriers or naturally occurring barriers, such as rough terrain, mountains, or cliffs).

9. *High-contact residential/commercial surface.* A high-contact residential/commercial surface is a surface in a residential/commercial area which is repeatedly touched, often for relatively long periods of time. Doors, wall areas below 6 feet in height, uncovered flooring, windowsills, fencing, banisters, stairs, automobiles, and children's play areas, such as outdoor patios and sidewalks, are examples of high-contact residential/commercial surfaces. Examples of low-contact residential/commercial surfaces include interior ceilings, interior wall areas above 6 feet in height, roofs, asphalt roadways, concrete roadways, wooden utility poles, unmanned machinery, concrete pads beneath electrical equipment, curbing, exterior structural building components (e.g., aluminum/vinyl siding, cinder block, asphalt tiles), and pipes.

10. *High-contact industrial surface.* A high-contact industrial surface is a surface in an industrial setting which is repeatedly touched, often for relatively long periods of time. Manned machinery and control panels are examples of high-contact industrial surfaces. High-contact industrial surfaces are generally of impervious solid material. Examples of low-contact industrial surfaces include ceilings, walls, floors, roofs, roadways and sidewalks in the industrial area, utility poles, unmanned machinery, concrete pads beneath electrical equipment, curbing, exterior structural building components, indoor vaults, and pipes.

11. *Soil.* The term means all vegetation, soils and other ground media, including but not limited to sand, grass, gravel, and oyster shells. It does not include concrete and asphalt.

12. *Impervious solid surfaces.* The term means solid surfaces which are nonporous and thus unlikely to absorb spilled PCBs within the short period of time required for cleanup of spills under this policy. Impervious solid surfaces include, but are not limited to, metals, glass, aluminum siding, and enameled or laminated surfaces.

13. *Nonimpervious solid surfaces.* The term means solid surfaces which are porous and are more likely to absorb spilled PCBs prior to completion of the cleanup requirements prescribed in this policy. Nonimpervious solid surfaces include, but are not limited to, wood, concrete, asphalt, and plasterboard.

14. *Double wash/rinse.* The double wash/rinse procedural performance standard applied in this policy means a minimum requirement to cleanse solid surfaces (both impervious and nonimpervious) two times with an appropriate solvent or other material in which PCBs are at least 5 percent soluble (by weight). A volume of PCB-free fluid sufficient to cover the contaminated surface completely must be used in each wash/rinse. The wash/rinse requirement does not mean the mere spreading of solvent or other fluid over the surface, nor does the requirement mean a once-over wipe with a soaked cloth. Precautions must be taken to contain any runoff resulting from the cleansing and to dispose properly of wastes generated during the cleansing.

15. *Standard wipe test.* For spills of high concentration PCBs on solid surfaces, this policy requires cleanup to numerical surface standards and sampling by a standard wipe test to verify that the numerical standards have been met. This definition constitutes the minimum requirements for an appropriate wipe testing protocol. A standard-size template (10 centimeters (cm) X 10 cm) will be used to delineate the area of cleanup; the wiping medium will be a gauze pad or glass wool of known size which has been saturated with hexane. It is important that the wipe be performed very quickly after the hexane is exposed to air. EPA strongly recommends that the gauze (or glass wool) be prepared with hexane in the laboratory and that the wiping medium be stored in sealed glass vials until it is used for the wipe test. Further, EPA requires the collection and testing of field blanks and replicates.

16. *Requirements and standards.* The term "requirements," as used in this policy means both the procedural responses and numerical decontamination levels set forth in this policy as constituting adequate cleanup of PCBs. The term "standards" means the numerical decontamination levels set forth in this policy.

17. *Spill area.* The term means the area of soil on which visible traces of the spill can be observed plus a buffer

zone of 1 foot beyond the visible traces. Any surface or object (e.g., concrete sidewalk or automobile) within the visible traces area, or on which visible traces of the spilled material are observed, is included in the spill area. This area represents the minimum area assumed to be contaminated by PCBs in the absence of precleanup sampling data and is thus the minimum area which must be cleaned.

18. *Spill boundaries.* The term means the actual area of contamination as determined by postcleanup verification sampling, or by precleanup sampling to determine actual spill boundaries. EPA can require additional cleanup when necessary to decontaminate all areas within the spill boundaries to the levels required in this policy (e.g., additional cleanup will be required if postcleanup sampling indicates that the area decontaminated by the responsible party, such as the spill area as defined in paragraph 13 of this unit, did not encompass the actual boundaries of PCB contamination).

IV Requirements for PCB Spill Cleanup

A. General Requirements

Unless expressly limited, the reporting, disposal, and precleanup sampling requirements in this unit apply to all spills of PCBs at concentrations of 50 ppm or greater which are subject to decontamination requirements under TSCA, including those spills listed in Unit II.A.1 through 6 which are excluded from the final cleanup standards in Units IV. B and C.

1. *Reporting requirements.* The following reporting is required in addition to applicable reporting requirements under the CWA or CERCLA. For example, under the National Contingency Plan all spills involving 10 lbs or more of PCB material must currently be reported to the National Response Center (1–800–424–8802). The requirements below are designed to be consistent with existing reporting requirements to the extent possible so as to minimize reporting burdens on the governments as well as the regulated community.

a. Where a spill directly contaminates surface water, sewers, or drinking water supplies (see discussion under Unit II.A), the responsible party shall notify the appropriate EPA regional office (the Office of Pesticides and Toxic Substances Branch) and obtain guidance for appropriate cleanup measures in the shortest possible time after discovery, but in no case later than 24 hours after discovery.

b. Where a spill directly contaminates grazing lands or vegetable gardens (see discussion under Unit II.A), the responsible party shall notify the appropriate EPA regional office (the Office of Pesticides and Toxic Substances Branch) and proceed with the immediate requirements specified in Unit IV.B or C, depending of the source of the spill, in the shortest possible time after discovery, but in no case later than 24 hours after discovery.

c. Where a spill exceeds 10 pounds of PCB material (generally 1 gallon of PCB dielectric fluid) and is not addressed in paragraph 1.a. or b. of this unit, the responsible party will notify the appropriate EPA regional office and proceed to decontaminate the spill area in accordance with this TSCA policy in the shortest possible time after discovery, but in no case later than 24 hours after discovery. For purposes of the notification requirement, the 10 pounds are measured by the weight of the PCB-containing material spilled rather than by the weight of only the PCBs spilled.

d. Spills of 10 pounds of less which are not addressed in paragraphs 1. a. or b. of this unit must cleaned up in accordance with this policy (in order to avoid EPA enforcement liability), but notification of EPA is not required.

2. *Disposal of cleanup debris and materials.* All contaminated soils, solvents, rags, and other materials resulting from the cleanup of PCBs under this policy shall be properly stored, labeled, and disposed of in accordance with the provisions of 40 CFR 761.60.

3. *Determination of spill boundaries in the absence of visible traces.* For spills where there are insufficient visible traces yet there is evidence of a leak or spill, the boundaries of the spill are to be determined by using a statistically based sampling scheme.

B. Requirements for Cleanup of Low-Concentration Spills Which Involve Less Than 1 LB PCBs By Weight (Less Than 270 Gallons of Untested Mineral Oil)

1. *Decontamination requirements.* Spills of low-concentrations PCBs (as defined in Unit III) which involve less than 1 pound of PCBs by weight (i.e., less than 270 gallons of untested mineral oil containing less than 500 ppm PCBs) shall be cleaned in the following manner:

a. Solid surfaces must be double washed/rinsed (as defined in Unit III) except that all indoor, residential surfaces other than vault areas must be cleaned to 10 micrograms per 100 square centimeters (100 $\mu g/cm^2$) by standard commercial wipe tests.

b. All soil within the spill area (i.e., visible traces of soil and a buffer of 1 lateral foot around the visible traces) must be excavated and the ground be restored to its original configuration by back-filling with clean soil (i.e., containing less than 1 ppm PCBs).

c. Requirements in paragraphs 1. a. and b. of this unit must be completed within 48 hours after the owner of the equipment, facility, or other source of PCBs (the responsible party) was notified or became aware of the spill.

2. *Effect of emergency or adverse weather.* Completion of cleanup may be delayed beyond 48 hours in case of circumstances including but not limited to, civil emergency, adverse weather conditions, lack of access to the site, and emergency operating conditions. The occurrence of a spill on a weekend or overtime costs are not acceptable reasons to delay response. Completion of cleanup may be delayed only for the duration of the adverse conditions. If the adverse weather conditions, or time lapse due to other emergency, have left insufficient visible traces, the responsible party must use a statistically based sampling scheme to determine the spill boundaries as required in Unit IV.A.3.

3. *Records and certification.* At the completion of cleanup, the responsible party or appropriate agent shall document the cleanup with records and certification of decontamination. The records and certification must be maintained for a period of 5 years. The records and certifiction shall consist of the following:

a. Indentification of the source of the spill, e.g., type of equipment.

b. Estimated or actual date and time of the spill occurrence.

c. The date and time cleanup was completed or terminated (if cleanup was delayed by emergency or adverse weather: the nature and duration of the delay).

d. A brief description of the spill location.

e. Precleanup sampling data used to establish the spill boundaries if required because of insufficient visible traces, and a brief description of the sampling methodology used to establish the spill boundaries.

f. A brief description of the solid surfaces cleaned and of the double wash/rinse method used.

g. Approximate depth of soil excavation and the amount of soil removed.

h. A certification statement signed by the responsible party or his/her designated agent (e.g., a facility manager or foreman) stating that the cleanup

requirements have been met and that the information contained in the record is true to the best of his/her knowledge.

While not required for compliance with this policy, the following information would be useful if maintained in the records: (1) Additional pre- or postcleanup sampling: and (2) the estimated cost of the cleanup by man-hours, dollars, or both.

C. Requirements for Cleanup of High-Concentration Spills and Low-Concentration Spills Involving 1 LB or More PCBs By Weight (270 Gallons or More of Untested Mineral Oil)

Cleanup of low-concentration spills involving 1 lb or more PCBs by weight, and of all other spills of regulated materials shall be considered complete if all of the immediate requirements, cleanup standards, sampling, and recordkeeping requirements below are met.

1. *Immediate requirements.* The following four actions must be taken as quickly as possible and within no more than 24 hours (or within 48 hours for PCB Transformers) after the owner of the equipment or container from which the spill occurred, or other responsible representative of the owner such as a facility manager, was notified or became aware of the spill, except that actions described in paragraphs 1. b., c., and d. of this unit may be delayed beyond 24 hours if circumstances (e.g., civil emergency, hurricane, tornado, or other similar adverse weather conditions, lack of access due to physical impossibility, or emergency operating conditions) so require for the duration of the adverse conditions. The occurrence of a spill on a weekend or overtime costs are not acceptable reasons to delay response. Owners of spilled PCBs who have delayed cleanup because of these types of circumstances must keep records documenting the fact that circumstances precluded rapid response. The responsible party shall:

a. Notify the EPA regional office and the NRC as required by Unit IV.A.1 or by other applicable statutes.

b. Effectively cordon off or otherwise delineate and restrict an area encompassing any visible traces plus a 3-foot buffer, and place clearly visible signs advising persons to avoid the area, to minimize the spread of contamination as well as the potential for human exposure.

c. Record and document the area of visible contamination, noting the extent of the visible trace areas and the center of the visible trace area. If there are no visible traces, the responsible party shall record this fact and contact the regional office of the EPA for guidance in completing statistical sampling of the spill area to establish spill boundaries.

d. Initiate cleanup of all visible traces of the fluid on hard surfaces and initiate removal of all visible traces of the spill on soil and other media, such as gravel, sand, oyster shells, etc.

If there has been a delay in reaching the site and there are insufficient visible traces of PCBs remaining at the spill site, the owner of the PCBs must estimate (based on the amount of material missing from the equipment or container) the area of the spill and immediately cordon off the area of suspect contamination. The owner must then utilize a statistically based sampling scheme to identify the boundaries of spill area as soon as practicable.

Although this policy requires certain immediate actions, as described above, EPA is not placing a time limit on completion of the cleanup effort since the time required for completion will vary from case to case. However, the Agency expects that decontamination will be achieved promptly in all cases and will consider the promptness of completion in determining whether a responsible party made good faith efforts to clean up in accordance with this policy.

2. *Requirements for decontaminating spills in outdoor electrical substations.* Spills which occur in outdoor electrical substations (as defined in Unit III) shall be decontaminated in accordance with paragraphs a. and b. of this unit. Conformance to the cleanup standards in paragraphs a. and b. of this unit shall be verified by postcleanup sampling as specified in Unit V. At such times as outdoor electrical substations are converted to another use, the spill site shall be cleaned up to the non-restricted access requirements in Unit IV.C.4.

a. Contaminated solid surfaces (both impervious and non-impervious) shall be cleaned to a PCB concentration of 100 $\mu g/100\ cm^2$ (as measured by standard wipe tests).

b. At the option of the responsible party, soil contaminated by the spill will be cleaned: (1) To 25 ppm PCBs by weight, or (2) to 50 ppm PCBs by weight provided that a label or notice is visibly placed in the area. Upon demonstration by the responsible party that cleanup to 25 ppm or 50 ppm will jeopardize the integrity of the electrical equipment at the substation, the EPA regional office may establish an alternative cleanup method or level and place the responsible party on a reasonably timely schedule for completion of cleanup.

3. *Requirements for decontaminating spills in other restricted access areas.* Spills which occur in restricted access locations other than outdoor electrical substations (as defined in Unit III) shall be decontaminated in accordance with paragraphs 3.a through e. of this unit. Conformance to the cleanup standards in paragraphs a. through e. of this unit shall be verified by postcleanup sampling as specified in Unit V. At such times as restricted access areas other than outdoor electrical substations are converted to another use, the spill site shall be cleaned up to the nonrestricted access area requirements under Unit IV.C.4.

a. High-contact solid surfaces (see definition of high-contact industrial surfaces in Unit III) shall be cleaned to 10 $\mu g/100\ cm^2$ (as measured by standard wipe tests).

b. Low-contact, indoor, impervious solid surfaces will be decontaminated to 10 $\mu g/100\ cm^2$.

c. At the option of the responsible party, low-contact, indoor, nonimpervious surfaces will be cleaned either: (1) To 10 $\mu g/100\ cm^2$; or (2) to 100 $\mu g/100\ cm^2$ and encapsulated. The Regional Administrator, however, retains the authority to disallow the encapsulation option for a particular spill situation upon finding that the uncertainties associated with that option pose special concerns at that site. That is, the Regional Administrator would not permit encapsulation if he/she determined that if encapsulation failed at a particular site this failure would create an imminent hazard.

d. Low-contact, outdoor surfaces (both impervious and non-impervious) shall be cleaned to 100 $\mu g/100\ cm^2$.

e. Soil contaminated by the spill will be cleaned to 25 ppm PCBs by weight.

4. *Requirements for decontaminating spills in non-restricted access areas.* Spills which occur in nonrestricted access locations (as defined in Unit III) shall be decontaminated in accordance with paragraphs 4.a. through e. of this unit. Conformance to the cleanup standards in paragraphs 4.a. through e. of this unit shall be verified by postcleanup sampling as specified in Unit V. At such times as outdoor electrical substations and other restricted access areas are converted to another use, the spill site shall be cleaned up to the non-restricted access area requirements.

a. Furnishings, toys, and other easily replaceable household items shall be disposed of in accordance with the provisions of 40 CFR 761.60 and replaced by the responsible party.

b. Indoor solid surfaces and high-contact outdoor solid surfaces (see definition of high contact residential/

commercial surfaces in Unit III) shall be cleaned to 10 $\mu g/100\ cm^2$ (as measured by standard wipe tests).

c. Indoor vault areas, and low-contact, outdoor, impervious solid surfaces shall be decontaminated to 10 $\mu g/100\ cm^2$.

d. At the option of the responsible party, low-contact, outdoor, nonimpervious solid surfaces shall be either: (1) cleaned to 10 $\mu g/100\ cm^2$; or (2) cleaned to 100 $\mu g/100\ cm^2$ and encapsulated. The Regional Administrator, however, retains the authority to disallow the encapsulation option for a particular spill situation upon finding that the uncertainties associated with that option pose special concerns at that site. That is, the Regional Administrator would not permit encapsulation if he/she determined that if the encapsulation failed the failure would create an imminent hazard at the site.

e. Soil contaminated by the spill will be decontaminated to 10 ppm PCBs by weight, provided that soil is excavated to a minimum depth of 10 inches. The excavated soil will be replaced with clean soil (i.e., containing less than 1 ppm PCBs), and the spill site will be restored (e.g., replacement of turf).

5. *Records.* The responsible party or appropriate agent shall document the cleanup with records of decontamination. The records must be maintained for a period of 5 years. The records and certification shall consist of the following:

a. Identification of the source of the spill (e.g., type of equipment.)

b. Estimated or actual date and time of the spill occurrence.

c. The date and time cleanup was completed or terminated (if cleanup was delayed by emergency or adverse weather: the nature and duration of the delay).

d. A brief description of the spill location and the nature of the materials contaminated (this information should include whether the spill occurred in an outdoor electrical substation, other restricted access location, or in a nonrestricted access area).

e. Precleanup sampling data used to establish the spill boundaries if required because of insufficient visible traces, and a brief description of sampling methodology used to establish the spill boundaries.

f. A brief description of the solid surfaces cleaned.

g. Approximate depth of soil excavation and the amount of soil removed.

h. Postcleanup verification sampling data and, if not otherwise apparent from the documentation, a brief description of the sampling methodology and analytical technique used.

While not required for compliance with this policy, information on the estimated cost of cleanup (by man-hours, dollars, or both) would be useful if maintained in the records.

EPA will soon issue for publication in the Federal Register a proposed rule to require these recordkeeping measures to facilitate EPA's monitoring of PCB spill cleanups.

V. Sampling Requirements

Postcleanup sampling is required to verify the level of cleanup under Unit IV.C. 2 through 4. The responsible party, or designated agent, may use any statistically valid, reproducible, sampling scheme (either random samples or grid samples), provided that the requirements of paragraphs 1. and 2. of this unit are satisfied.

1. The sampling area is the greater of (1) an area equal to the area cleaned plus an additional 1-foot boundary, or (2) an area 20 percent larger than the original area of contamination.

2. The sampling scheme must ensure 95 percent confidence against false positives.

3. The number of samples must be sufficient to ensure that areas of contamination of a radius of 2 feet or more within the sampling area will be detected, except that the minimum number of samples is 3 and the maximum number of samples is 40.

4. The sampling scheme must include calculation for expected variability due to analytical error.

EPA recommends the use of the sampling scheme developed by the Midwest Research Institute (MRI) for use in EPA enforcement inspections: "Verification of PCB Spill Cleanup by Sampling and Analysis." Guidance for the use of this sampling scheme is available in the MRI report "Field Manual for Grid Sampling of PCB Spill Sites to Verify Cleanup." Both the MRI sampling scheme and the guidance document are available from the TSCA Assistance Office at the address and telephone number given under "FOR FURTHER INFORMATION CONTACT." The major advantage of this sampling scheme is that it is designed to characterize the degree of contamination within the entire sampling area with a high degree of confidence while using fewer samples than any other grid or random sampling scheme. This sampling scheme also allows some sites to be characterized on the basis of composite samples.

At its discretion, EPA may take samples from any spill site. If EPA's sampling indicates that the remaining concentration level exceeds the required level, EPA will require further cleanup. For this purpose, the numerical level of cleanup required for spills cleaned in accordance with Unit IV.B are deemed to be the equivalent of numerical cleanup requirements required for cleanups under Unit IV.C. 2 through 4. EPA may sample using its best engineering judgment, a statistically valid random or grid sampling technique, or both. When using engineering judgment or random "grab" samples, EPA will take into account that there are limits on the power of a grab sample to dispute statistically based sampling of the type required of the responsible party. EPA headquarters will provide guidance to the EPA regions on the degree of certainty associated with various grab sample results.

VI. EPA Enforcement and the Effect of Compliance With This Policy

Although a spill of material containing 50 ppm or greater PCBs is considered improper PCB disposal, this policy establishes requirements that EPA considers to be adequate cleanup of the spilled PCBs. Cleanup in accordance with this policy means compliance with the procedural as well as the numerical requirements of this policy. Compliance with this policy creates a presumption against both enforcement action for penalties and the need for further cleanup under TSCA. The Agency reserves the right, however, to initiate appropriate action to compel cleanup where, upon review of the records of cleanup, EPA finds that the decontamination levels in the policy have not been achieved. The Agency also reserves the right to seek penalties where the Agency believes that the responsible party has not made a good faith effort to comply with all provisions of this policy, such as prompt notification of EPA of a spill, recordkeeping, etc.

EPA's exercise of enforcement discretion does not preclude enforcement action under other provisions of TSCA or any other Federal statute. This includes, even in cases where the numerical decontamination levels set forth in this policy have been met, civil or criminal action for penalties where EPA believes the spill to have been the result of gross negligence or knowing violation.

The TSCA policy has been reviewed by the Office of Management and Budget.

This concludes EPA's TSCA policy. Unit VII, which follows, contains the rationale for the policy, the data on which the policy was based, and the

areas in which EPA lacks data. EPA solicits information to fill those gaps.

VII. Development of the TSCA Spill Cleanup Policy

As will become apparent in the discussion below, there are gaps in the information which was available to the Agency in developing the TSCA policy. The EPA designed the TSCA policy to enable the Agency and the regulated industry to gather data for filling the gaps. In all cases, through the cleanup levels established in the TSCA policy and by retaining authority to require additional cleanup where warranted, EPA has placed sufficient controls on the party responsible for cleanup to ensure that future PCB spills will be cleaned to levels that do not pose an unreasonable risk of injury to human health or the environment. The TSCA policy reflects the Agency's best judgment in light of available information. However, the Agency welcomes comment on, and additional relevant information about, the TSCA policy.

A. Risks Posed by Leaks and Spills of PCBs

1. *Frequency, amount, and nature of leaks and spills.* The TSCA policy establishes the measures which EPA considers to constitute adequate cleanup of PCB contamination resulting from activities regulated under TSCA. EPA expects that the TSCA policy will be most frequently applied to leaks and spills of PCBs which occur during the use of authorized equipment such as electrical transformers and capacitors. Thus, EPA's evaluation of the risks posed by spills of PCBs and the costs associated with cleanup following these spills focuses primarily on leaks and spills of PCBs from electrical transformers and capacitors.

EPA estimates that there are 121,000 (askarel) PCB Transformers currently in use, over 20 million mineral oil transformers contaminated with PCBs currently in use, and over 2.8 million large PCB Capacitors currently in use. Available data indicate that on an annual basis, about 3.3 percent of (askarel) PCB Transformers in use will leak or spill PCBs. The average PCB leak or spill from a PCB Transformer is 5.3 gallons, or about 66 pounds of PCBs. On an annual basis, EPA expects that about 264,000 pounds of PCBs are leaked or spilled into the environment from PCB Transformers.

EPA expects that about 17,000 of these PCB Transformers are located in electrical substations, where 37,000 pounds of spilled PCBs would be expected to be released each year. EPA expects that about 27,000 PCB Transformers are located in industrial facilities, where an estimated 59,000 pounds of PCBs are spilled each year. Finally, 77,000 PCB Transformers are located in other areas (most likely, in or near commercial buildings), where an estimated 168,000 pounds of PCBs are released each year.

EPA expects that of the over 20 million PCB-containing mineral oil transformers in use, 76 percent are located in residential neighborhoods and public areas (i.e., schools, shopping centers, etc.). The majority of these transformers contain less than 500 parts per million PCBs. Available data indicate that the average leak or spill of PCBs from mineral oil transformers contains less than one-tenth of a tablespoon of PCBs, or 0.08 ounce of PCBs. On an annual basis, EPA expects that 627 pounds of PCBs are spilled from mineral oil transformers in residential and public areas. The remaining mineral oil transformers are located in outdoor electrical substations, industrial facilities, and rural areas. EPA estimates that less than 200 pounds of PCBs are leaked from these transformers each year.

Based on available data, EPA estimates that there are over 2.8 million PCB Capacitors in use. Of these 2.8 million capacitors, EPA estimates that 1.6 million are in use in substations or generating facilities and 1.2 million are inside buildings and on utility poles throughout the distribution system. Of the 1.6 million PCB Capacitors in use in electrical substations, EPA expects that over 12,000 leak each year, releasing about 200,000 pounds of PCBs. Of the 1.2 million PCB Capacitors in use inside buildings and on utility poles, EPA expects that over 9,000 leak each year, releasing about 154,000 pounds of PCBs.

Electrical transformers generally contain 100 times the amount of PCBs contained within PCB Capacitors. PCB Transformers typically contain between 300 and 500 gallons of PCB dielectric fluid, while PCB Capacitors generally contain about 3 gallons of PCB dielectric fluid. Unlike PCB Transformer spills, the majority of PCB Capacitor spills involve the violent rupture of the capacitor and the spraying of PCBs. Thus, PCBs spilled from energized capacitors are generally more widely distributed in the spill area than PCBs spilled from transformers. Available data indicate that for over 80 percent of capacitor spills, PCBs are distributed as far as 11 feet from the center of the spill.

PCBs spilled from transformers are more likely to leak from gaskets and valves, and the area contaminated from these types of spills is more directly related to the amount of spilled material than is the case for explosive ruptures, such as occur from energized capacitors. EPA conducted a crude experiment in order to predict the maximum lateral spread of PCBs from other than explosive ruptures of electrical transformers; the maximum spread of water on low-porosity surfaces was tested and assumed to be equivalent to the maximum lateral spread of PCBs and PCB-contaminated oils on soil. EPA found that for every gallon of material spilled, one could expect a maximum area of contamination of about 3 square meters (m^2). Although with time one would see a slight increase in lateral spread (assuming no runoff), for the most part, a 1 gallon spill of PCB material from a transformer cleaned up within 2 weeks of the spill would not be expected to contaminate greater than a $3m^2$ area. This assumes of course that the material has not been tracked into other areas in the interim and that weather conditions have not caused further lateral spread. Spills of PCBs from deenergized capacitors, other authorized equipment, and containers of PCBs would be expected to behave in a similar manner to leaks and spills of PCBs from non-explosive transformer spills.

To summarize, the total amount of PCBs released from electrical transformers and capacitors each year from leaks and spills of PCBs is estimated at about 620,000 pounds (out of an estimated 163 million pounds of PCBs in use in this equipment). Of these PCBs, 38 percent are spilled in electrical substations and 62 percent of these PCBs are spilled in residential/commercial areas, rural areas, and industrial facilities. The majority of spilled PCBs are spilled from capacitors, and capacitor spills typically result from violent ruptures and lead to the distribution of PCBs at distances as far away as 11 feet from the center of the spill (total average spill area is about 380 square feet).

PCBs spilled from deenergized capacitors, transformers (excluding transformers involved in fires), other authorized equipment, and PCB Containers generally involve nonviolent ruptures and the maximum spread of the spilled material can be estimated by assuming $3m^2$ of contamination per gallon of spilled material.

2. *Toxicity and environmental persistence.* EPA has concluded that PCBs are both toxic and persistent. In earlier rulemakings and Agency PCB health effects review documents, EPA has determined that persons exposed to PCBs can develop chloracne (a

disfiguring skin illness), and that based on laboratory animal data, there is a potential for reproductive effects and developmental toxicity as well as oncogenicity in humans exposed to PCBs. EPA has also concluded that PCBs are resistant to degradation and that they bioaccumulate and bioconcentrate in the fatty tissue of organisms. PCBs are very stable compounds which can persist for years when released into the environment. A more detailed discussion of EPA's findings on the health effects of PCBs can be found in the July 10, 1986 Federal Register (51 FR 28172).

Recently, the Office of Health and Environmental Assessment (OHEA) at EPA developed draft health advisories for PCBs in soil for use by EPA's Office of Emergency and Remedial Response (OERR). These health advisory levels are to be used as guidelines for initiating removal action for sites contaminated with PCBs. The draft health advisories developed by OHEA address both the oncogenic risks and other than oncogenic risks posed to humans by exposures to PCBs in soils at various levels.

The cancer potency slope factor for PCBs has been estimated by EPA's Cancer Assessment Group (CAG) and the Office of Toxic Substances (OTS) to be 4.34 $(mg/kg/day)^{-1}$ and 3.57 $(mg/kg/day)^{-1}$, respectively. An average of these values (4.0 $(mg/kg/day)^{-1}$) was used in the OHEA draft health advisories as the PCB cancer potency factor. The OHEA calculation of the human dose associated with a 1×10^{-6} level of oncogenic risk is 0.0175 microgram/day. The Agency's assessment of risks associated with dermal and inhalation exposure to PCBs on solid surfaces was also based upon a cancer potency slope factor of 4.0 $(mg/kg/day)^{-1}$ for PCBs.

3. *Potential for exposure to spilled PCBs.* In evaluating potential routes of exposure to PCBs which are leaked and spilled, EPA looked at the potentional for exposure in nonrestricted access areas, restricted access areas, and restricted access, outdoor electrical substations. Further, since the TSCA policy is designed to apply to the large majority of spill situations, EPA focused on the routes of potential exposure associated with typical spill situations. Unique spill scenarios which present greater potential exposures or additional routes of exposure are excluded from application of the cleanup levels in the TSCA policy.

In developing the cleanup standards for PCB spills into soil and other ground media, EPA relied primarily on the exposure and risk analysis in the OHEA health advisories for PCBs in soil. Exposure estimates used to evaluate the risk associated with various cleanup standards for solid surfaces such as metals, wood, asphalt, and concrete were developed by the EPA's Office of Toxic Substances. Neither the OHEA assessment for PCBs in soil nor the OTS estimates of exposure to PCBs in soil assume PCB contamination of other potential exposure pathways such as surface water, drinking water supplies, sewer systems, vegetable gardens, or grazing lands.

EPA believes that the large majority of spills which occur after the effective date of the TSCA policy will not involve these additional routes of exposure. Those exceptional spill situations which would result in these additional routes of exposure are excluded from the TSCA policy and must be cleaned up to levels determined by the appropriate EPA regional office. EPA excluded these spill situations from the scope of the policy because such spills may have to be cleaned up to lower levels in recognition of the potential for additional human exposures. Whether or not more stringent cleanup standards are necessary for these exceptional spill situations, the additional routes of potential exposure require some degree of evaluation on a case-by-case basis before making a final decision on appropriate cleanup levels in such circumstances.

Further, spills of PCBs into sand, soil, gravel, and other similar materials in special areas within the residential/commercial setting (i.e., areas where people may come into repeated daily contact, such as children's sandboxes, spills which pose particular concerns about future ground water contamination, spills which involve the combustion of PCBs (and the possible formation of toxic combustion byproducts such as polychlorinated dibenzofurans (PCDFs) and polychlorinated dibenzodioxins (PCDDs)), and spills onto farmland may be required to be cleaned up to lower levels, in recognition of the increased potential for exposure. The EPA regional offices should be contacted for guidance on appropriate cleanup for these types of spills.

The OTS dermal exposure assessments for PCBs on solid surfaces such as metal, concrete, and asphalt assume that PCBs are transferred to the skin at a relatively high rate (50 percent or more). This assumption is based on the results of an EPA-sponsored study on the transfer of PCBs from glass and unpainted metal to skin (human skin and pig skin) upon contact. EPA currently lacks data on the rate of transfer of PCBs from rougher, porous surfaces such as concrete, asphalt or wood to human skin. Although EPA expects that the transfer rate may be significantly lower for rough, porous surfaces, in the absence of more extensive data, EPA has assumed that the transfer rate would be the same as for glass and unpainted steel.

a. *Exposures in nonrestricted access areas.* Areas which do not limit public access by man-made or naturally occurring barriers (i.e., residential, commercial, and unrestricted access rural areas) generally present the greatest potential for a high degree of human exposure to spilled PCBs. Spills of PCBs in residential/commercial areas may involve: (1) The contamination of soil, grass, sand, gravel, and other ground materials; (2) the contamination of outdoor solid surfaces such as metal, concrete, asphalt, and wood; (3) the contamination of indoor solid surfaces such as ceilings, walls, and floors; (4) the contamination of indoor vault areas; and (5) the contamination of household items such as clothing, toys, and patio furniture.

Spills of PCBs in unrestricted access rural areas may involve the contamination of materials like those listed under paragraphs (1) and (2) of this unit. Since human exposures to PCBs spilled in unrestricted access rural areas may at times approach levels of exposure in residential/commercial areas, EPA has included unrestricted access rural areas under the standards for residential/commercial spills. Typical exposures would, however, be expected to be lower in rural areas compared to typical exposures in the residential/commercial setting.

i. *Exposures from outdoor spills into soil, sand, gravel, and other similar materials.* The principal routes of exposure to PCBs spilled into soil in residential areas would be through inhalation and ingestion. Dermal exposures may also occur, although EPA expects that the PCBs will adsorb to the soil particles, reducing the rate of dermal absorption. OHEA has calculated the expected levels of human exposure to PCBs through inhalation and ingestion when PCBs are present at different levels in soil.

The OHEA assessment concludes that a PCB level of 1 to 6 ppm PCBs in soil in a residential/commercial area would be associated with a 1×10^{-6} level of oncogenic risk. OHEA assumed that the contaminated area is 0.5 acre (18,225 square feet), that 0.6 gram of soil is ingested per day at ages 0 to 6, and that the population is exposed for 50 percent of their lifetime. The placement of a 10-

inch cap of clean soil on top of soil containing 1 to 6 ppm PCBs reduces the expected level of oncogenic risk by an order of magnitude (to 1×10^{-6}).

ii. *Exposures to spills onto solid surfaces*—a. *Outdoor surfaces.* PCBs spilled onto outdoor solid surfaces such as metal, concrete, asphalt, or utility poles in residential areas would result in some inhalation exposures and infrequent dermal exposure. For solid surfaces to which people would be expected to have frequent contact, higher levels of dermal exposure would be expected.

Examples of low-contact outdoor solid surfaces include asphalt and concrete roadways, roof areas, unmanned machinery, concrete pads beneath electrical equipment, curbing, and external structural building components. The estimated level of oncogenic risk associated with exposures to low-contact outdoor surfaces in residential/commercial settings (using reasonable worst-case assumptions about exposures to surface levels of 10 $\mu g/100$ cm^2) is between 1×10^{-5} and 1×10^{-6}.

Sidewalks and patios where children play, fences, and automobiles are examples of residential/commercial surfaces to which people may come into frequent daily contact. The estimated level of oncogenic risk associated with exposures to such higher contact outdoor surfaces in residential/commercial settings (using reasonable worst-case assumptions about exposures to surfaces levels of 0.5 to 1.0 $\mu g/100$ cm^2) is between 1×10^{-5} and 1×10^{-6}.

b. *Indoor surfaces.* Spill onto indoor hard surfaces may occur when outdoor electrical equipment ruptures catastrophically and sprays PCBs into a room through an open window or door. Spills onto indoor hard surfaces may also occur when electrical equipment inside a building leaks or spills PCBs and the leaked or spilled PCBs are distributed outside the electrical equipment room into other areas of the building through ventilation equipment and ductwork or by tracking. Inhalation exposures and dermal exposures would be expected following a spill of PCBs onto an indoor hard surface. Based on EPA's assessment of the risks posed by spills of PCBs onto indoor hard surfaces, dermal exposures would be expected to be the exposure route of highest concern (inhalation exposures to residual indoor PCB levels of 10 $\mu g/100$ cm^2 are associated with a 1×10^{-6} level of oncogenic risk, while dermal exposures to this same level of PCBs on a low-contact indoor surface are associated with a 1×10^{-5} level of oncogenic risk).

From a perspective of dermal exposure, there are two types of potentially contaminated surfaces: low-contact surfaces and high-contact surfaces. Low-contact surfaces are those which are infrequently touched. In a residential/commercial setting, ceilings and wall areas above 6 feet in height would be considered low-contact surfaces. High-contact surfaces are those which are repeatedly contacted, often for relatively long periods of time. High-contact surfaces in a residential/commercial area include uncovered flooring, wall areas below 6 feet in height, stairways, bannisters, and railings. The estimated level of oncogenic risk associated with dermal exposures to 1 $\mu g/100$ cm^2 of PCBs on low-contact indoor hard surfaces is between 1×10^{-5} and 1×10^{-6}. The National Institute of Occupational Safety and Health (NIOSH) has reported that 0.5 $\mu g/100$ cm^2 is background level of PCBs on indoor hard surfaces, and this level of residual contamination on a high-contact indoor hard surface would be associated with a level of oncogenic risk between 1×10^{-5} and 1×10^{-6}.

c. *Easily replaceable/high-contact items.* PCBs released from electrical transformers or capacitors in indoor residential/commercial areas may result in the contamination of nonstructural, easily replaceable materials to which people have repeated daily contact (i.e., clothing, household furnishings, paper, notepads, office supplies, patio furniture, toys, swingsets, etc.). Since PCBs are expected to be readily absorbed through the skin, dermal contact with PCBs spilled onto these types of high-contact materials could result in significant exposures. Materials such as paper, clothing, and toys would themselves absorb the PCBs and be difficult, if not impossible, to clean completely. These materials would, however, be expected to release the PCBs slowly, resulting in continued dermal exposures to low levels of PCBs over a prolonged period of time. Depending upon the extent of contamination, inhalation exposures from these types of contaminated high-contact materials could also be significant.

iii. *Spills in indoor vault areas*—a. *Transformer vault areas and electrical equipment rooms.* One of the more common areas of PCB contamination from leaks and spills of PCBs from inuse electrical equipment are indoor transformer vault areas and electrical equipment rooms. Exposures to PCBs may occur through both inhalation and dermal routes, although since many transformer vaults and electrical equipment rooms are well ventilated (reducing airborne PCB concentrations in the vaults), the route of exposure of highest concern in an electrical equipment room would be the dermal route. From the perspective of inhalation exposures alone, residual PCB levels of 10 $\mu g/100$ cm^2 would be associated with oncogenic risks below 1×10^{-6}. Dermal exposures to PCBs on floors, ceilings, and walls in vault areas would be expected to be less than dermal exposures to PCBs on low-contact surfaces in residential/commercial areas because of less frequent contact with the contaminated surfaces. Residual PCB levels (on ceilings, floors, and walls) of 10 $\mu g/100$ cm^2 in vault areas would be associated with a 1×10^{-5} to 1×10^{-6} level of oncogenic risk.

b. *Exposures in industrial and other restricted access (nonsubstation) locations.* PCB spills in the industrial setting may result in: (1) Outdoor contamination of soil, sand, gravel, and other similar materials; (2) contamination of both indoor and outdoor hard surfaces; and (3) indoor contamination of vault areas and electrical equipment rooms.

i. *Outdoor contamination of soil, sand, etc.* The principal route of human exposure to PCBs from a spill in soil is through the inhalation route. Soil ingestion and dermal contact with soil would not be expected to be significant routes of exposure at a restricted access site. PCB levels in soil of 25 ppm would present less than a 1×10^{-7} level of oncogenic risk to people on-site who work more than 0.1 km from the actual spill area (assuming that the spill area is less than 0.5 acre).

ii. *Contamination of hard surfaces.* Hard surfaces which may become contaminated in an industrial area include items such as lathes and other types of industrial equipment and machinery, in addition to surfaces such as asphalt, concrete, and wood. In industrial areas, outdoor hard surfaces such as concrete, asphalt, and structural building components would not be expected to result in as frequent exposures as may occur for these surfaces in a residential/commercial area. Thus, residual PCB levels on these outdoor industrial surfaces of 100 $\mu g/100$ cm^2 (following cleanup of an "askarel" spill) would not be expected to result in significant exposures.

Indoor contamination of structural building components in industrial areas (e.g., ceilings, walls, and floors) and contamination of vaults or electrical equipment rooms would result in some inhalation exposures, but the principal route of exposure would be expected to be through dermal contact. Residual

PCB levels of 10 $\mu g/100\ cm^2$ on indoor low-contact surfaces in industrial areas would not be expected to result in significant exposures.

The highest exposure to surface contamination in an industrial setting would be to industrial workers using machinery contaminated with PCBs. Such workers may experience repeated dermal exposures to PCBs, and others may also experience such exposures if this equipment is sold, transported and/or reused. Dermal contact with PCBs may also lead to oral exposures during meals and while smoking. Depending upon the level of contamination, inhalation may also be significant, since workers using machinery are expected to be in close proximity to the equipment during its use. Higher levels of inhalation exposure can be anticipated if the contaminated equipment is operated under conditions of elevated temperature, since this would increase the volatility of any PCBs present on the equipment. Residual PCB levels of 0.5 $\mu g/100\ cm^2$ (reported by NIOSH as the background level for PCBs) on these types of high-contact surfaces would not result in significant exposures.

c. *Exposures in outdoor electrical substations.* PCBs released from transformers or capacitors in fenced-off electrical substations pose little risk of directly exposing members of the general population to PCBs. Electrical substations are typically located at distances greater than 0.1 kilometer from population areas and are generally fenced off to restrict access to authorized maintanance personnel only. Dermal and inhalation exposures by maintenance workers would, however, occur during servicing activities, an oral exposures may result from the transfer of PCBs from the hands to the mouth during meals or while smoking. Populations located at distances of greater than 0.1 kilometer from the site of the spill may incur inhalation exposures. However, the OHEA assessment document indicates that PCB levels in soil between 220 and 1,300 ppm present a 1×10^{-7} level of oncogenic risk to populations located at distances of 1 km or more from spill areas. Thus, PCB levels of 50 ppm in soil in an outdoor electrical substation would not be expected to result in significant exposures to the general population.

PCB spills onto hard surfaces in outdoor electrical substations may result in inhalation exposures and dermal exposures primarily to maintenance workers. The general population would not be expected to incur significant inhalation exposures, and dermal contact would be unlikely given the fact that these areas are fenced off and have restricted access. Residual PCB levels of 100 $\mu g/100\ cm^2$ would not be expected to result in significant exposures to either the occasional maintenance worker or the general population.

4. *Conclusions about PCB leaks and spills.* Leaks and spills of PCBs from PCB Equipment in residential/commercial areas present the greatest potential for human exposure, when compared to other types and locations of PCB spills. The potential for exposure is high. Oral, dermal, and inhalation exposures to PCBs from spills in residential areas are likely, expecially among children. Human exposures to PCBs spilled in unrestricted access rural areas also may at times be comparable to exposures in the residential setting. Available data on leaks and spills of PCBs indicate that the majority of PCBs spilled from PCB Equipment are spilled from PCB Capacitors and that there are many of these capacitors in use in residential areas.

Potential exposure to spilled PCBs or residual PCBs after cleanup of a spill in a restricted-access area is generally limited to industrial workers. Some types of contamination in restricted-access industrial facilities pose worker exposures as great as residential/commercial exposures. For example, contamination of control panels or manually operated machinery can result in frequent, if not continuous, dermal exposure to industrial workers. Other than any high-contact, manned equipment which may be located outdoors, spills outdoors in an industrial setting will result in a lesser degree of inhalation exposure to workers and the general population than similar spills in residential/commercial settings.

Spills in outdoor electrical substations pose the lowest potential exposures. Outdoor electrical substation are generally fenced off to restrict access to authorized personnel only. There is some possibility of dermal and inhalation exposures to maintenance workers. However, exposure to maintenance workers is less likely to be of a continuous or frequent nature than exposures to industrial workers.

B. Costs of Cleanup

1. *Factors influencing the cost of cleanup.* The cleanup of spilled PCBs from transformers and capacitors typically consists of a number of different measures: (1) Securing the spill site, (2) formulating a spill cleanup plan based on the nature of the spill, (3) removing or repairing the leaking equipment, (4) removing contaminated material (e.g., soil), (5) cleaning contaminated surfaces and decontaminating or removing equipment contaminated during cleanup, (6) properly disposing of contaminated materials, (7) ensuring proper cleanup by sampling and chemical analysis, and (8) restoring the site.

The costs associated with phases (1), (2), (3), and (8) above are fairly fixed and will not vary significantly with more, less stringent cleanup requirements. The costs associated with cleanup phases (4), (5), (6), and (7) above are the more variable elements influencing the total cost of cleanup and are affected by several factors, including the concentration of PCBs spilled, the amount of PCB material spilled, the size or boundary of the spill area (often influenced by the time lapse between spill occurrence and cleanup), and the nature and stringency of cleanup requirements.

According to information gathered by OTS staff in telephone surveys and, in a few cases, written comments, the two most significant cost factors associated with various target cleanup levels are: (1) The number of times cleanup crews have to be sent to the site; and (2) whether or not postcleanup sampling is required. The imposition of sampling costs automatically has the effect of requiring that cleanup crews have to make at least two trips to the site (at least once to clean and at least once to restore the site after the sampling results have verified cleanup). The more stringent cleanup requirements are, the more likely that more than one attempt at cleanup will have to be made and that more than one set of samples will have to be taken.

Thus, the effect of stringent cleanup requirements coupled with requirements for postcleanup verification by sampling is to (1) mitigate exposures by ensuring a greater degree of cleanup; (2) exacerbate exposures by leaving the site open for a longer period of time; and (3) increase the costs of complying with the policy. EPA weighed these countervailing considerations in establishing the various cleanup requirements in the TSCA policy. The balance between the benefits associated with potential risk reductions on the one hand, and potential additional risks and costs imposed by more stringent requirements on the other, weigh out differently depending on the potential for exposure and the degree of certainty that less stringent requirements will result in adequate cleanup.

As is discussed below, EPA has limited data on the cost of cleanup, particularly in the area of cleaning solid

surfaces such as metal or concrete to various levels. Further, the data that are available cannot readily be analyzed to determine the impact of variables other than the degree of cleanup and the extent of sampling performed at the site (e.g., amount spilled, types of ground materials or surfaces contaminated, and time lapse between spill occurrence and cleanup). EPA has evaluated available data and estimated the ranges of incremental costs associated with cleanup to various levels.

a. *Cleanup of spills in soil, sand, gravel, etc.* Available information suggests that the cost of cleanup of soil to "background" levels of PCBs can be 3 to 15 times greater than the cost of cleanup to 50 ppm. Further, since PCBs are ubiquitous in the enviroment and are found at low concentrations throughout the world (in areas where PCBs have never been used), target levels for PCBs spill cleanup which are lower than background levels in certain areas can result in very high cleanup costs. Large volumes of soil may have to be excavated for the removal of what may ultimately be only 1 to 2 pounds of PCBs. For example, there are about 2 pounds of PCBs present in four truckloads of soil containing 25 ppm PCBs. After excavation, these 2 pounds of PCBs may, under the PCB disposal regulations, be transferred to a PCB landfill for disposal.

EPA estimated the costs associated with the cleanup of a PCB spill in soil using two sets of available data on the costs of cleanup. One set of data on the costs associated with the cleanup of a 0.5 acre site contaminated with PCBs and PCB Equipment suggests that cleanup to 50 ppm would cost on the order of $105,000; cleanup to 25 ppm would cost on the order of $214,000; and cleanup to "background" levels of PCBs would cost on the order of $279,000. Using these data to estimate cleanup costs for different target levels of soil cleanup for typical PCB Capacitor spills, EPA estimates that the cleanup of a typical PCB Capacitor spill to 50 ppm would cost on the order of $2,100; cleanup to 25 ppm PCBs would cost on the order of $4,280; and cleanup to "background" levels of PCBs would cost on the order of $5,580.

EPA also estimated the costs of cleanup to various target levels using data on the cost of cleanup in actual capacitor spill situations. These data indicate that while the costs of cleanup to level between 50 and 25 ppm do not vary significantly, cleanup to levels lower than 25 and 20 ppm result in dramatically higher costs of cleanup. Based on these actual capacitor spill cleanup data, the cleanup of a typical PCB Capacitor spill to 50 or 25 ppm would cost on the order of $4,000; cleanup to 10 ppm PCBs would cost on the order of $10,000; and cleanup to background levels could cost on the order of $60,000 to $140,000.

EPA estimates that the actual incremental costs of cleaning typical capacitor spills to various levels would fall in the range between the two sets of estimates. Assuming that there are about 20,000 PCB Capacitor spills each year, EPA's estimates of the total annual cost of cleanup of PCB Capacitor spills to 50 ppm, 25 ppm, and "background" levels is $42–80 million, $80–86 million, and $112 million to over $2 billion, respectively.

Alternatively, information indicates that for lower concentration spills (i.e., spills of material containing less than 500 ppm PCBs—generally from oil-filled electrical equipment), cleanup of visible traces plus a 1 foot boundary of spills onto soil and other ground media within a few days of the spills will sufficiently ensure that PCB concentrations in the soil will be cleaned to a few parts per million. Therefore, the additional costs associated with sampling may not be justified by any incremental risk reduction where the spill is of low-concentration spills.

b. *Cleanup of PCBs spilled on surfaces.* EPA lacks data on the practicality, feasibility, and incremental costs associated with the cleanup of PCBs on hard surfaces. Comments from utility representatives as well as EPA regional office personnel suggest that costs of cleaning solid surfaces are significantly influenced by the nature of the contaminated surface (i.e., whether it is a porous surface such as concrete or an inpervious surface such as metal). Thus, cleaning porous, hard surfaces to 1 $\mu g/10cm^2$ may be very difficult, if not impossible, to achieve through generally accepted methods of cleanup (i.e., scrubbing and cleansing of surfaces) because of the penetration of PCBs below the surface.

EPA has evaluated some data on the costs of cleaning PCB-contaminated surfaces to various levels. However, all of the available data are from historical PCB spill sites which are typically more difficult to clean than fresh spills. Further, EPA's experience suggests that the relative difficulty of cleaning porous surfaces versus impervious surfaces increases as the amount of time between spill occurrence and cleanup increases.

Surface cleanup standards which are not achievable would in effect require the breakup and removal of materials such as concrete. Data on the breakup, removal, and replacement of concrete materials at historical spill sites indicate that the costs of such remedial action may range from one to several million dollars. While historical sites generally involve more extensive areas of cleanup, both in terms of PCBs absorbed into the materials and the area of contamination, these data do suggest that there are significant costs associated with a removal requirement for solid surfaces. EPA, however, has no comparative cost data on the differences in cost between cleaning solid surfaces by conventional methods versus removing solid surfaces.

An EPA-sponsored Midwest Research Institute study of the removal of PCBs from surfaces such as painted and unpainted steel, asphalt, concrete block, wood, and poured concrete demonstrates fairly clearly that a time lapse of several days before initiation of cleanup can significantly impede the efficacy of surface cleanup methods. That study also suggests that the washing of rough, porous hard surfaces with solvent is not very effective in removing the spilled askarel PCBs. Cleanup by washing/wiping within a few days following low concentration spills, however, is expected to be effective in reducing surface concentrations of PCBs to levels which will not pose unreasonable risks. This is primarily because of the small amount of PCBs actually present in most mineral oil spills.

In lieu of potentially impracticable surface cleanup standards, or removal standards, EPA also considered the option of requiring cleanup to an achievable surface cleanup standard and encapsulation with an appropriate epoxy resin or other sealant. Anecdotal information suggests that encapsulation is likely to be less costly than removal of solid surfaces by 1 to 3 orders of magnitude. While EPA believes that encapsulation can significantly reduce both dermal and inhalation exposure to residual PCB concentrations on solid surfaces, the Agency is aware of no empirical data which verify the effectiveness of encapsulants in reducing exposures. Ancedotal information provided by EPA regions and members of the regulated community raises doubts as to the long-term effectiveness of encapsulation because of the tendency of many sealants to peel or chip off over time.

In the absence of adequate data on the costs of cleaning fresh PCB spills on solid surfaces, the standards which appear in the TSCA policy for the cleanup of hard surfaces primarily reflect concerns about the potential for

exposure to these levels of residual PCBs which remain after cleanup. The TSCA policy does allow for less stringent cleanup options coupled with EPA-approved encapsulation measures where the spill occurs on porous surfaces outdoors (or on low-contact surfaces indoors in restricted-access facilities) because of concerns about the achievability of more stringent cleanup levels on porous surfaces. The encapsulation option is allowed for certain low-contact solid surfaces in order to allow the development of data on the efficacy of encapsulation in mitigating exposures to residual PCBs on solid surfaces.

2. *Conclusions about costs of cleanup.* The costs associated with the cleanup of spills of PCBs into soils and other similar materials are principally influenced by the area of contamination and the target levels set for cleanup. The lower the target level, the more testing, excavation, and removal, and the higher the cost. The cleanup of spilled PCBs in soil from PCB Transformers and Capacitors to "background" levels of PCBs costs three times as much to an order of magnitude more than cleanup to 50 ppm, and several times as much as cleanup to 25 ppm. On an annual basis, hundreds of millions of dollars are being spent for the cleanup of PCBs from transformer and capacitor spills.

EPA expects that the costs associated with the cleanup of contaminated surfaces will increase as cleanup levels or standards decrease and that at some point, excavation and removal may be the only choice to reduce PCB levels further. Data on the practicality, feasibility, and cost of cleanup to the levels discussed in this TSCA policy and data on the effectiveness and cost of encapsulation are necessary so that EPA can more accurately weigh the cost effectiveness of various surface cleanup requirements.

EPA is seeking data on the incremental costs associated with the cleanup of different types of surfaces to the levels discussed in this TSCA policy. In the absence of data to support a determination that these levels are not practically achievable at a reasonable cost (or data that support a determination that exposures will be significantly lower than those assumed by current Agency assessments), the policy includes the surface cleanup standards discussed in Unit IV.

EPA is also seeking data on the effectiveness (in terms of risk reduction), cost, and long-term durability of the use of sealants and encapsulating materials. If encapsulating materials and sealants can be demonstrated to be more cost effective than removal, EPA will retain the provisions allowing, for low-contact, porous surfaces, the use of such sealants in lieu of cleanup to more stringent standards.

C. Risk/Benefit Discussion of Cleanup Requirements

1. *Scope and general requirements of the policy.* The TSCA policy applies to spills which EPA can require to be cleaned under TSCA enforcement authority (spills of 50 ppm or greater PCBs which generally occur during EPA-regulated use, processing, distribution in commerce, or storage of PCBs) and which occur after the effective date of the policy. The policy is prospective because historical spills tend to involve more extensive areas of contamination and because many of the requirements of the policy are based on the assumption that the spill area will be cleaned or contained within 1 or 2 days of spill occurrence.

PCB is an oily material which leaves stains on soil and surfaces. While EPA recognizes that the visibility of PCBs on soils and surfaces is inversely related to the amount of time elapsed from release to discovery and that weather conditions may also influence spill visibility, EPA expects that for the majority of PCB spills, visible traces of PCBs will remain at the time of spill discovery. The exception to this rule is for spills which are undiscovered for an extended period of time and spills which are followed by adverse/severe weather conditions. In these cases, the TSCA policy requires the use of an appropriate statistical sampling scheme to define the boundaries of the spill area.

EPA believes that one of the principal ways of minimizing human and environmental exposures to spilled PCBs is to prevent the spread of spilled PCBs (e.g., by cordoning off the area) and to initiate cleanup actions as soon as practically possible. This minimizes the likelihood that materials will be spread beyond the spill area through tracking and runoff and reduces the probability of surface water and drinking water contamination. EPA believes that response time in initiating remedial action may be one of the most significant factors influencing the magnitude of risks following PCB spills, especially in residential areas.

2. *Spills of low concentrations PCBs involving less than one lb of PCBs.* Where the spilled material is relatively low in PCB concentration (i.e., containing 50 ppm or greater, but less than 500 ppm PCBs), the TSCA policy allows cleanup in accordance with procedural performance requirements (i.e., double wash/rinse for solid surfaces and removal of visible traces plus a 1-foot lateral boundary for soil and other ground media provided that the minimum depth of excavation is 10 inches) rather than requiring sampling to verify that numerical cleanup standards have been met.

The procedural requirements are based upon data indicating that for low-concentration spills, double washing/rinsing of surfaces and removal of visible traces plus a buffer on soil will successfully reduce the PCB concentration in the spill area to the numerical standards specified for the higher concentration spills. The essential difference is that for spills of low-concentration PCBs, sampling is not required to verify that numerical standards are achieved, provided that the responsible party or designated agent certifies that the cleanup has been performed in accordance with all of the requirements of the policy. The enforcement provisions of the policy specify that should the sampling data indicate that the numerical standards have not been met, or that the area cleaned does not encompass all areas of actual contamination (as determined by sampling or indicated by remaining visible traces), the regional office will require additional cleanup.

3. *Spills of 500 ppm or greater PCBs and spills of low-concentration PCBs of more than 1 lb PCBs by weight*—a. *Spills in nonrestricted access areas.* The most stringent requirements for the cleanup of spilled PCBs apply to PCB spills in residential/commercial/unrestricted access rural areas. The TSCA policy requires that materials such as household furnishings, toys, and swingsets be disposed of rather than decontaminated. Generally, these types of materials pose a high potential for exposure and are very difficult to clean. Indeed, the costs of cleanup of these types of materials to the limit of detection of PCBs (which would be required given the high potential for repeated daily exposures) would in many cases exceed replacement costs.

Soil and other similar materials in residential/commercial areas must be cleaned up to 10 ppm PCBs, and a cap of clean materials containing less than 1 ppm PCBs (the average background level for PCBs in soil) equal to a minimum of 10 inches must be placed on top of the excavated area. The OHEA risk assessment for PCBs in soil indicates that 1 to 6 ppm PCBs in 0.5 acre of residential soil is associated with a 1×10^{-5} level of oncogenic risk and that placing a 10-inch cap of clean soil reduces this level of oncogenic risk by an order of magnitude. PCB Capacitor

spills typically result in the contamination of significantly less than 0.5 acre.

For an average PCB Capacitor spill, the difference in costs associated with cleaning up PCBs to 10 ppm versus to below 1 ppm ("background" levels) in a residential area is estimated to be about $500. Assuming 9,000 PCB Capacitor spills each year in residential areas, the estimated incremental costs associated with cleanup of these spills to less than 1 ppm versus cleanup to 10 ppm is $4.5 million.

Thus, EPA believes that soil containing 10 ppm PCBs (covered by a cap containing PCBs below the practical limits of quantitation) in a residential/commercial area would not present unreasonable risks to public health or the environment.

The surface standards presented in the TSCA policy are based primarily on the potential for exposure to PCBs remaining on surfaces in residential/commercial areas and the estimated level of risk posed by these residual PCBs. EPA lacks data on the incremental costs associated with cleanup to different surface standards and is soliciting these data.

The TSCA policy does allow for less stringent surface cleanup options coupled with EPA-approved encapsulation measures where the spill occurs on porous, low-contact surfaces outdoors because of concerns about the achievability of more stringent cleanup levels on porous surfaces. The encapsulation option is allowed for low-contact solid surfaces outdoors in order to allow the development of data on the efficacy of encapsulation in mitigating exposures to residual PCBs on solid surfaces.

b. *Industrial and other restricted access spills.* Spills of PCBs in industrial areas and other restricted access locations would present lower risks than spills in residential/commercial areas because access to these areas is controlled. Inhalation exposure is considered to be the principal route of exposure to PCBs in soil, sand, or gravel in an industrial area. Dermal exposures would, however, be likely when PCBs are spilled on manned machinery and equipment. EPA believes that the level of risk posed by 25 ppm PCB in soil at a restricted access facility would not present significant risks either to the typical worker or to the general public. EPA also believes that the surface standards of 100 $\mu g/100\ cm^2$ for low-contact outdoor surfaces and 10 $\mu g/100\ cm^2$ for indoor low-contact surfaces (and vaults) and high-contact surfaces in a restricted access industrial facility would not present significant risks to workers or to the general population.

Further, there are significant costs associated with the cleanup of soil, sand, gravel, and other similar materials in an industrial facility to background levels compared to cleanup to 25 ppm PCBs. Thus, EPA believes that cleanup of soil, sand, gravel, and other similar materials in an industrial facility to 25 ppm would not present unreasonable risks to public health or the environment.

The surface standards for industrial facilities and other restricted access locations which are presented in the TSCA policy are based on the expected level of exposure to residual PCBs left on industrial surfaces after cleanup. EPA lacks data on the incremental costs associated with cleanup to different standards and is soliciting these data. The TSCA policy does allow for less stringent cleanup options coupled with EPA-approved encapsulation measures where the spill occurs on porous, low-contact surfaces because of concerns about the achievability of more stringent cleanup levels on porous surfaces. The encapsulation option is allowed for certain low-contact solid surfaces in order to allow the development of data on the efficacy of encapsulation in mitigating exposures to residual PCBs on solid surfaces.

c. *Outdoor electrical substation spills.* The least stringent requirements for the cleanup of spilled PCBs apply to spills in outdoor electrical substations. This reflects the lower potential for exposures and fewer people potentially at risk of exposures to PCBs spilled in these areas. Spills of PCBs from PCB Equipment into solid materials such as soils in electrical substations must be cleaned up to 25 ppm PCBs or to 50 ppm PCBs, provided that a label is placed in the spill area indicating that a PCB spill has occurred. The OHEA risk assessment for PCBs in soil indicates that a PCB level of 50 ppm PCBs in soil located more than 1 kilometer from a population would present less than a 1×10^{-7} level of oncogenic risk. This risk assessment assumes only inhalation exposures at distances of 1.0 kilometer (or approximately 1,093 yards) from the spill site.

The surface standards which appear in the TSCA policy are primarily based on the expected exposures and risks posed by contact with the residual PCBs. EPA lacks data on the incremental costs associated with cleanup to higher or lower levels.

D. Scope of the Policy

EPA expects the large majority of PCB spills subject to decontamination under TSCA to conform to the typical spill scenarios considered in developing the TSCA policy. However, some small percentage of spills will warrant more stringent cleanup requirements because of additional routes of exposure or significantly greater exposures than those associated with typical PCB spills. Further, there may be exceptional spill situations which require less stringent cleanup or a different approach to cleanup because of factors associated with the particular spill which mitigate expected exposures and risks or which make cleanup to these requirements impracticable. Therefore, the policy (1) excludes certain situations from the scope of this policy; (2) discusses other spill situations which may warrant the use of EPA authority to require more stringent requirements and (3) retains EPA flexibility to allow alternative or less stringent decontamination measures when the responsible party demonstrates the presence of risk-mitigating factors or demonstrates the impracticability of applying this policy to a particular spill situation. For those exceptional spill situations which are excluded from the policy or in which EPA may exercise flexibility based on site-specific considerations, the EPA regions have the authority to determine cleanup requirements.

The TSCA policy excludes certain spill situations from the automatic applications of the numerical cleanup requirements in the policy (i.e. spills directly into water, sewers, vegetable gardens, and grazing areas, and spills which directly contaminate surface waters prior to cleanup) because those situations will always present routes of exposure to PCBs which are not associated with the typical spills considered in developing the TSCA policy. These exceptional spill situations may not always require more extensive cleanup. However, they will always require some level of site-specific analysis to determine appropriate cleanup measures.

Although EPA expects the majority of remaining spills to be subject to this policy, occasionally the site-specific characteristics (e.g., depth to ground water, type of soil, and the presence of a shallow well) may pose exceptionally high potential for ground water contamination by residual PCBs (i.e., those PCBs remaining after cleanup to the standards specified in this policy). Spills which pose a high degree of potential for ground water contamination are not automatically excluded from the policy as are spills into surface waters because the presence of such potential may not be

readily apparent, EPA feels that automatically excluding such spills from the scope of the policy could result in the delay of cleanup—a particularly undesirable outcome if potential ground water contamination is a significant concern. The Agency will, however, require cleanup to more stringent decontamination standards upon making a determination that such additional cleanup is necessary because of ground water concerns associated with residual contamination based upon comparison of the site characteristics to ground water modeling and exposure assessments which have been developed by EPA in support of this policy.

Additionally, spill situations involving significantly larger areas of contamination than those assumed in developing this policy (e.g., <0.5 acre in soil and 550 ft^2 on indoor surfaces), spills in areas involving repeated daily contact such that the potential for dermal contact may be significantly higher than assumed in developing this policy (e.g., spills resulting from violent equipment rupture during which PCDFs and/or PCDDs were formed, and spills onto farmland on which root crops are grown) may require more stringent levels of cleanup. In such situations, the Regional Administrator may require cleanup in addition to that required by the policy. In those circumstances, the Regional Administrator must notify the Director, Office of Toxic Substances, of his finding and the basis for the finding.

The TSCA policy also retains EPA's flexibility to allow less stringent, or alternative decontamination measures based upon site-specific considerations. EPA will exercise this flexibility if the responsible party demonstrates that cleanup to the numerical decontamination levels is clearly unwarranted because of risk-mitigating factors, or that compliance with the procedural requirements or numerical standards in the policy is impracticable at a particular site. For example, the responsible party may show that a dirt road need not be decontaminated to the levels in this policy because exposure to residual PCB concentrations on a dirt road will be significantly mitigated when the road is paved with concrete or asphalt in the immediate future. Alternatively, the responsible party may demonstrate that cleanup to the numerical standards in the policy may threaten the structural integrity of major equipment installations or buildings.

For purposes of delineating the scope of the TSCA policy, as well as to provide EPA regional offices and the regulated community with guidance on whether a particular spill may require more stringent standards for cleanup, EPA has performed some preliminary analyses of these potentially higher-risk spill situations. EPA evaluated the exposures and risks associated with these potential higher-risk situations using reasonable worst-case assumptions to identify cases where strict application of the standards in this policy may be inappropriate. In addition, EPA believes that some spill situations may require special action (e.g., additional immediate actions to prevent contamination of sewers where there is a real potential for such contamination).

1. *Spills into sewers.* EPA has not assessed the exposures associated with the release of PCBs into sewers because of the lack of information about the behavior of spilled PCBs in a system of sewer pipes. Being denser than water, PCBs may collect in depressions and irregularities in the sewer pipes, providing a long-term source of release of PCBs into the environment. On the other hand, the PCBs may be carried from place to place in the sewer system. Thus, there is no method for estimating which segments of the system are contaminated, what the concentration of PCBs is, or how long the PCBs will remain in the system. Because of the difficulty of evaluting the behavior of PCBs in sewer systems and because of the practical problems of decontaminating a sewer system, PCB spills into sewage are not covered by this policy. Each regional office will determine the requirements for adequate cleanup of sewer systems, treatment works, and sewage contaminated with PCBs on a case-by-case basis.

2. *Spills which may result in ingestion exposure through drinking water and fish.* To evaluate the potential for exposures through the ingestion of drinking water and/or fish contaminated with PCBs, EPA looked at four spill situations using reasonable worst-case assumptions: (1) PCBs are spilled into a pond and the sediment is cleaned to 10 ppm; (2) PCBs are spilled into a river and the sediment is cleaned to 10 ppm; (3) PCBs are spilled on the bank of a stream and the soil is cleaned to 25 ppm; and (4) PCBs are spilled on soil and cleaned to 25 ppm, assuming that the PCBs will enter ground water.

Preliminary results indicate that where PCBs enter surface water in a pond, the ingestion of fish and/or drinking water from the pond after the sediment has been cleaned to 10 ppm in accordance with the policy may result in significant human exposures. While rivers have higher flow rates than ponds, so that cleanup of river sediment to 10 ppm PCBs may not pose significant human exposures, PCB contamination in surface water poses important considerations in addition to the risks associated with residual PCB concentrations in sediment, in much the same way as sewer contamination. Thus, all spills directly into waterways and spills which contaminate waterways before cleanup are excluded from the TSCA policy.

Where PCBs are spilled near a waterway and the soil is cleaned to 25 ppm PCBs, PCBs can enter surface water through runoff from the contaminated bank. (EPA assumed that runoff into the stream occurs only after the spill area has been cleaned to 25 ppm.) Based on reasonable worst-case assumptions, the consumption of drinking water and/or fish from the stream for 70 years will not pose risks of concern and are therefore included in the scope of the policy. However, should the spill contaminate surface water cleanup, the spill must be cleaned to site-specific requirements. Therefore, the responsible party should take special measures to contain the spill area and prevent the spread of PCBs into the waterway.

In looking at the possible exposures associated with soil cleaned to 25 ppm through the ingestion of drinking water from contaminated ground water, the climate, soil and ground water configuration were assumed to be such as to maximize PCB concentrations in ground water. Significant risks may be posed by the ingestion of drinking water from very shallow wells (i.e., dug wells taking in water at the source of loading) in areas where soil characteristics and depth to aquifer maximize the potential for leaching into ground water. However, the ingestion of drinking water from a well located a horizontal distance of 50 meters from the spill site in these areas does not appear to pose significant risks. Thus, while the majority of spills will not result in unreasonable risks of human exposure due to ground water contamination, some unique spill scenarios will pose potential ingestion exposure through ground water contamination.

The TSCA policy specifically reserves EPA's authority to impose more stringent cleanup requirements in cases where site characteristics present special risks of ingestion of PCBs through ground water contamination. These spills are not automatically excluded from application of the policy because the potential for ground water contamination may not be readily apparent.

plus an additional 1-foot boundary, or (2) an area 20 percent larger than the original area of contamination.

(b) The sampling scheme must ensure 95 percent confidence against false positives.

(c) The number of samples must be sufficient to ensure that areas of contamination of a radius of 2 feet or more within the sampling area will be detected, except that the minimum number of samples is 3 and the maximum number of samples is 40.

(d) The sampling scheme must include calculation for expected variability due to analytical error.

(e) EPA recommends the use of a sampling scheme developed by the Midwest Research Institute (MRI) for use in EPA enforcement inspections: "Verification of PCB Spill Cleanup by Sampling and Analysis." Guidance for the use of this sampling scheme is available in the MRI report "Field Manual for Grid Sampling of PCB Spill Sites to Verify Cleanup." Both the MRI sampling scheme and the guidance document are available from the TSCA Assistance Office, Environmental Protection Agency, Rm. E-543, 401 M St. SW., Washington, DC 20460 (202-554-1404). The major advantage of this sampling scheme is that it is designed to characterize the degree of contamination within the entire sampling area with a high degree of confidence while using fewer samples than any other grid or random sampling scheme. This sampling scheme also allows some sites to be characterized on the basis of composite samples.

(f) EPA may, at its discretion, take samples from any spill site. If EPA's sampling indicates that the remaining concentration level exceeds the required level, EPA will require further cleanup. For this purpose, the numerical level of cleanup required for spills cleaned in accordance with § 761.125(b) is deemed to be the equivalent of numerical cleanup requirements required for cleanups under § 761.125(c)(2) through (4). Using its best engineering judgment, EPA may sample a statistically valid random or grid sampling technique, or both. When using engineering judgment or random "grab" samples, EPA will take into account that there are limits on the power of a grab sample to dispute statistically based sampling of the type required of the responsible party. EPA headquarters will provide guidance to the EPA regions on the degree of certainty associated with various grab sample results.

§ 761.135 Effect of compliance with this policy and enforcement.

(a) Although a spill of material containing 50 ppm or greater PCBs is considered improper PCB disposal, this policy establishes requirements that EPA considers to be adequate cleanup of the spilled PCBs. Cleanup in accordance with this policy means compliance with the procedural as well as the numerical requirements of this policy. Compliance with this policy creates a presumption against both enforcement action for penalties and the need for further cleanup under TSCA. The Agency reserves the right, however, to initiate appropriate action to compel cleanup where, upon review of the records of cleanup or EPA sampling following cleanup, EPA finds that the decontamination levels in the policy have not been achieved. The Agency also reserves the right to seek penalties where the Agency believes that the responsible party has not made a good faith effort to comply with all provisions of this policy, such as prompt notification of EPA of a spill, recordkeeping, etc.

(b) EPA's exercise of enforcement discretion does not preclude enforcement action under other provisions of TSCA or any other Federal statute. This includes, even in cases where the numerical decontamination levels set forth in this policy have been met, civil or criminal action for penalties where EPA believes the spill to have been the result of gross negligence or knowing violation.

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(vi) Although this policy requires certain immediate actions, as described in paragraphs (c)(1)(i) through (iv) of this section, EPA is not placing a time limit on completion of the cleanup effort since the time required for completion will vary from case to case. However, EPA expects that decontamination will be achieved promptly in all cases and will consider promptness of completion in determining whether the responsible party made good faith efforts to clean up in accordance with this policy.

(2) *Requirements for decontaminating spills in outdoor electrical substations.* Spills which occur in outdoor electrical substations, as defined under § 761.123, shall be decontaminated in accordance with paragraphs (c)(2)(i) and (ii) of this section. Conformance to the cleanup standards under paragraphs (c)(2)(i) and (ii) of this section shall be verified by post-cleanup sampling as specified under § 761.130. At such times as outdoor electrical substations are converted to another use, the spill site shall be cleaned up to the nonrestricted access requirements under paragraph (c)(4) of this section.

(i) Contaminated solid surfaces (both impervious and non-impervious) shall be cleaned to a PCB concentration of 100 micrograms (μg)/100 square centimeters (cm^2) (as measured by standard wipe tests).

(ii) At the option of the responsible party, soil contaminated by the spill will be cleaned either to 25 ppm PCBs by weight, or to 50 ppm PCBs by weight provided that a label or notice is visibly placed in the area. Upon demonstration by the responsible party that cleanup to 25 ppm or 50 ppm will jeopardize the integrity of the electrical equipment at the substation, the EPA regional office may establish an alternative cleanup method or level and place the responsible party on a reasonably timely schedule for completion of cleanup.

(3) *Requirements for decontaminating spills in other restricted access areas.* Spills which occur in restricted access locations other than outdoor electrical substations, as defined under § 761.123, shall be decontaminated in accordance with paragraph (c)(3)(i) through (v) of this section. Conformance to the cleanup standards in paragraph (c)(3)(i) through (v) of this section shall be verified by postcleanup sampling as specified under § 761.130. At such times as restricted access areas other than outdoor electrical substations are converted to another use, the spill site shall be cleaned up to the nonrestricted access area requirements of paragraph (c)(4) of this section.

(i) High-contact solid surfaces, as defined under § 761.163 shall be cleaned to 10 μg/100 cm^2 (as measured by standard wipe tests).

(ii) Low-contact, indoor, impervious solid surfaces will be decontaminated to 10 μg/100 cm^2.

(iii) At the option of the responsible party, low-contact, indoor, nonimpervious surfaces will be cleaned either to 10 μg/100 cm^2 or to 100 μg/100 cm^2 and encapsulated. The Regional Administrator, however, retains the authority to disallow the encapsulation option for a particular spill situation upon finding that the uncertainties associated with that option pose special concerns at that site. That is, the Regional Administrator would not permit encapsulation if he/she determined that if the encapsulation failed the failure would create an imminent hazard at the site.

(iv) Low-contact, outdoor surfaces (both impervious and nonimpervious) shall be cleaned to 100 μg/100 cm^2.

(v) Soil contaminated by the spill will be cleaned to 25 ppm PCBs by weight.

(4) *Requirements for decontaminating spills in nonrestricted access areas.* Spills which occur in nonrestricted access locations, as defined under § 761.123, shall be decontaminated in accordance with paragraphs (c)(4)(i) through (v) of this section. Conformance to the cleanup standards at paragraphs (c)(4)(i) through (v) of this section shall be verified by postcleanup sampling as specified under § 761.130.

(i) Furnishings, toys, and other easily replaceable household items shall be disposed of in accordance with the provisions of § 761.60 and replaced by the responsible party.

(ii) Indoor solid surfaces and high-contact outdoor solid surfaces, defined as high contact residential/commercial surfaces under § 761.123, shall be cleaned to 10 μg/100 cm^2 (as measured by standard wipe tests).

(iii) Indoor vault areas and low-contact, outdoor, impervious solid surfaces shall be decontaminated to 10 μg/100 cm^2.

(iv) At the option of the responsible party, low-contact, outdoor, nonimpervious solid surfaces shall be either cleaned to 10 μg/100 cm^2 or cleaned to 100 μg/100 cm^2 and encapsulated. The Regional Administrator, however, retains the authority to disallow the encapsulation option for a particular spill situation upon finding that the uncertainties associated with that option pose special concerns at that site. That is, the Regional Administrator would not permit encapsulation if he/she determined that if the encapsulation failed the failure would create an imminent hazard at the site.

(v) Soil contaminated by the spill will be decontaminated to 10 ppm PCBs by weight provided that soil is excavated to a minimum depth of 10 inches. The excavated soil will be replaced with clean soil, i.e., containing less than 1 ppm PCBs, and the spill site will be restored (e.g., replacement of turf).

(5) *Records.* The responsible party shall document the cleanup with records of decontamination. The records must be maintained for a period of 5 years. The records and certification shall consist of the following:

(i) Identification of the source of the spill, e.g., type of equipment.

(ii) Estimated or actual date and time of the spill occurrence.

(iii) The date and time cleanup was completed or terminated (if cleanup was delayed by emergency or adverse weather: the nature and duration of the delay).

(iv) A brief description of the spill location and the nature of the materials contaminated. This information should include whether the spill occurred in an outdoor electrical substation, other restricted access location, or in a nonrestricted access area.

(v) Precleanup sampling data used to establish the spill boundaries if required because of insufficient visible traces and a brief description of the sampling methodology used to establish the spill boundaries.

(vi) A brief description of the solid surfaces cleaned.

(vii) Approximate depth of soil excavation and the amount of soil removed.

(viii) Postcleanup verification sampling data and, if not otherwise apparent from the documentation, a brief description of the sampling methodology and analytical technique used.

(ix) While not required for compliance with this policy, information on the estimated cost of cleanup (by man-hours, dollars, or both) would be useful if maintained in the records.

§ 761.130 Sampling requirements.

Postcleanup sampling is required to verify the level of cleanup under § 761.125(c) (2) through (4). The responsible party may use any statistically valid, reproducible, sampling scheme (either random samples or grid samples) provided that the requirements of paragraphs (a) and (b) of this section are satisfied.

(a) The sampling area is the greater of (1) an area equal to the area cleaned

discovery, but in no case later than 24 hours after discovery. For purposes of the notification requirement, the 10 pounds are measured by the weight of the PCB-containing material spilled rather than by the weight of only the PCBs spilled.

(iv) Spills of 10 pounds or less, which are not addressed in paragraph (a)(1) (i) or (ii) of this section, must be cleaned up in accordance with this policy (in order to avoid EPA enforcement liability), but notification of EPA is not required.

(2) *Disposal of cleanup debris and materials.* All concentrated soils, solvents, rags, and other materials resulting from the cleanup of PCBs under this policy shall be properly stored, labeled, and disposed of in accordance with the provisions of § 761.60.

(3) *Determination of spill boundaries in the absence of visible traces.* For spills where there are insufficient visible traces yet there is evidence of a leak or spill, the boundaries of the spill are to be determined by using a statistically based sampling scheme.

(b) *Requirements for cleanup of low-concentration spills which involve less than 1 pound of PCBs by weight (less than 270 gallons of untested mineral oil)*—(1) *Decontamination requirements.* Spills of less than 270 gallons of untested mineral oil, low-concentration PCBs, as defined under § 761.123, which involve less than 1 pound of PCBs by weight (e.g., less than 270 gallons of untested mineral oil containing less than 500 ppm PCBs) shall be cleaned in the following manner:

(i) Solid surfaces must be double washed/rinsed (as defined under § 761.123); except that all indoor, residential surfaces other than vault areas must be cleaned to 10 micrograms per 100 square centimeters (10 $\mu g/100$ cm^2) by standard commercial wipe tests.

(ii) All soil within the spill area (i.e., visible traces of soil and a buffer of 1 lateral foot around the visible traces) must be excavated, and the ground be restored to its original configuration by back-filling with clean soil (i.e., containing less than 1 ppm PCBs).

(iii) Requirements of paragraph (b)(1) (i) and (ii) of this section must be completed within 48 hours after the responsible party was notified or became aware of the spill.

(2) *Effect of emergency or adverse weather.* Completion of cleanup may be delayed beyond 48 hours in case of circumstances including but not limited to, civil emergency, adverse weather conditions, lack of access to the site, and emergency operating conditions. The occurrence of a spill on a weekend or overtime costs are not acceptable reasons to delay response. Completion of cleanup may be delayed only for the duration of the adverse conditions. If the adverse weather conditions, or time lapse due to other emergency, has left insufficient visible traces, the responsible party must use a statistically based sampling scheme to determine the spill boundaries as required under paragraph (a)(3) of this section.

(3) *Records and certification.* At the completion of cleanup, the responsible party shall document the cleanup with records and certification of decontamination. The records and certification must be maintained for a period of 5 years. The records and certification shall consist of the following:

(i) Identification of the source of the spill (e.g., type of equipment).

(ii) Estimated or actual date and time of the spill occurrence.

(iii) The date and time cleanup was completed or terminated (if cleanup was delayed by emergency or adverse weather: the nature and duration of the delay).

(iv) A brief description of the spill location.

(v) Precleanup sampling data used to establish the spill boundaries if required because of insufficient visible traces, and a brief description of the sampling methodology used to establish the spill boundaries.

(vi) A brief description of the solid surfaces cleaned and of the double wash/rinse method used.

(vii) Approximate depth of soil excavation and the amount of soil removed.

(viii) A certification statement signed by the responsible party stating that the cleanup requirements have been met and that the information contained in the record is true to the best of his/her knowledge.

(ix) While not required for compliance with this policy, the following information would be useful if maintained in the records:

(A) Additional pre- or post-cleanup sampling.

(B) The estimated cost of the cleanup by man-hours, dollars, or both.

(C) *Requirements for cleanup of high-concentration spills and low-concentration spills involving 1 pound or more PCBs by weight (270 gallons or more of untested mineral oil).* Cleanup of low-concentration spills involving 1 lb or more PCBs by weight and of all spills of materials other than low-concentration materials shall be considered complete if all of the immediate requirements, cleanup standards, sampling, and recordkeeping requirements of paragraphs (c) (1) through (5) of this section are met.

(1) *Immediate requirements.* The four actions in paragraphs (c)(1) (i) through (iv) of this section must be taken as quickly as possible and within no more than 24 hours (or within 48 hours for PCB Transformers) after the responsible party was notified or became aware of the spill, except that actions described in paragraphs (c)(1) (ii) through (iv) of this section can be delayed beyond 24 hours if circumstances (e.g., civil emergency, hurricane, tornado, or other similar adverse weather conditions, lack of access due to physical impossibility, or emergency operating conditions) so require for the duration of the adverse conditions. The occurrence of a spill on a weekend or overtime costs are not acceptable reasons to delay response. Owners of spilled PCBs who have delayed cleanup because of these types of circumstances must keep records documenting the fact that circumstances precluded rapid response.

(i) The responsible party shall notify the EPA regional office and the NRC as required by § 761.125(a)(1) or by other applicable statutes.

(ii) The responsible party shall effectively cordon off or otherwise delineate and restrict an area encompassing any visible traces plus a 3-foot buffer and place clearly visible signs advising persons to avoid the area to minimize the spread of contamination as well as the potential for human exposure.

(iii) The responsible party shall record and document the area of visible contamination, noting the extent of the visible trace areas and the center of the visible trace area. If there are no visible traces, the responsible party shall record this fact and contact the regional office of the EPA for guidance in completing statistical sampling of the spill area to establish spill boundaries.

(iv) The responsible party shall initiate cleanup of all visible traces of the fluid on hard surfaces and initiate removal of all visible traces of the spill on soil and other media, such as gravel, sand, oyster shells, etc.

(v) If there has been a delay in reaching the site and there are insufficient visible traces of PCBs remaining at the spill site, the responsible party must estimate (based on the amount of material missing from the equipment or container) the area of the spill and immediately cordon off the area of suspect contaimination. The responsible party must then utilize a statistically based sampling scheme to identify the boundaries of the spill area as soon as practicable.

facilities and extremely remote rural locations. (Areas where access is restricted but are less than 0.1 km from a residential/commercial area are considered to be residential/commercial areas.)

"Outdoor electrical substations" means outdoor, fenced-off, and restricted access areas used in the transmission and/or distribution of electrical power Outdoor electrical substations restrict public access by being fenced or walled off as defined under § 761.30(1)(1)(ii). For purposes of this TSCA policy, outdoor electrical substations are defined as being located at least 0.1 km from a residential/commercial area. Outdoor fenced-off and restricted access areas used in the transmission and/or distribution of electrical power which are located less than 0.1. km from a residential/commercial area are considered to be residential/commercial areas.

"PCBs" means polychlorinated biphenyls as defined under § 761.3. As specified under § 761.1(b), no requirements may be avoided through dilution of the PCB concentration.

"Requirements and standards" means:

(1) "Requirements" as used in this policy refers to both the procedural responses and numerical decontamination levels set forth in this policy as constituting adequate cleanup of PCBs.

(2) "Standards" refers to the numerical decontamination levels set forth in this policy.

"Residential/commercial areas" means those areas where people live or reside, or where people work in other than manufacturing or farming industries. Residential areas include housing and the property on which housing is located, as well as playgrounds, roadways, sidewalks, parks, and other similar areas within a residential community. Commercial areas are typically accessible to both members of the general public and employees and include public assembly properties, institutional properties, stores, office buildings, and transportation centers.

"Responsible party means the owner of the PCB equipment, facility, or other source of PCBs or his/her designated agent (e.g., a facility manager or foreman).

"Soil" means all vegetation, soils and other ground media, including but not limited to, sand, grass , gravel, and oyster shells. It does not include concrete and asphalt.

"Spill" means both intentional and unintentional spills, leaks, and other uncontrolled discharges where the release results in any quantity of PCBs running off or about to run off the external surface of the equipment or other PCB source, as well as the contamination resulting from those releases. This policy applies to spills of 50 ppm or greater PCBs. The concentration of PCBs spilled is determined by the PCB concentration in the material spilled as opposed to the concentration of PCBs in the material onto which the PCBs were spilled. Where a spill of untested mineral oil occurs, the oil is presumed to contain greater than 50 ppm, but less than 500 ppm PCBs and is subject to the relevant requirements of this policy.

"Spill area" means the area of soil on which visible traces of the spill can be observed plus a buffer zone of 1 foot beyond the visible traces. Any surface or object (e.g., concrete sidewalk or automobile) within the visible traces area or on which visible traces of the spilled material are observed is included in the spill area. This area represents the minimum area assumed to be contaminated by PCBs in the absence of precleanup sampling data and is thus the minimum area which must be cleaned.

"Spill boundaries" means the actual area of contamination as determined by postcleanup verification sampling or by precleanup sampling to determine actual spill boundaries. EPA can require additional cleanup when necessary to decontaminate all areas within the spill boundaries to the levels required in this policy (e.g., additional cleanup will be required if postcleanup sampling indicates that the area decontaminated by the responsible party, such as the spill area as defined in this section, did not encompass the actual boundaries of PCB concentration).

"Standard wipe test" means, for spills of high-concentration PCBs on solid surfaces, a cleanup to numerical surface standards and sampling by a standard wipe test to verify that the numerical standards have been met. This definition constitutes the minimum requirements for an appropriate wipe testing protocol. A standard-size template (10 centimeters (cm) x 10 cm) will be used to delineate the area of cleanup; the wiping medium will be a gauze pad or glass wool of known size which has been saturated with hexane. It is important that the wipe be performed very quickly after the hexane is exposed to air. EPA strongly recommends that the gauze (or glass wool) be prepared with hexane in the laboratory and that the wiping medium be stored in sealed glass vials until it is used for the wipe test. Further, EPA requires the collection and testing of field blanks and replicates.

§ 761.125 Requirements for PCB spill cleanup.

(a) *General.* Unless expressly limited, the reporting, disposal, and precleanup sampling requirements in paragraphs (a)(1) through (3) of this section apply to all spills of PCBs at concentrations of 50 ppm or greater which are subject to decontamination requirements under TSCA, including those spills listed under § 761.120(b) which are excluded from the cleanup standards at paragraphs (b) and (c) of this section.

(1) *Reporting requirements.* The reporting in paragraph (a)(1) (i) through (iv) of this section is required in addition to applicable reporting requirements under the Clean Water Act (CWA) or the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA). For example, under the National Contingency Plan all spills involving 10 pounds or more of PCB material must currently be reported to the National Response Center (1–800–424–8802). The requirements in paragraphs (a)(1) (i) through (iv) of this section are designed to be consistent with existing reporting requirements to the extent possible so as to minimize reporting burdens on governments as well as the regulated community.

(i) Where a spill directly contaminates surface water, sewers, or drinking water supplies, as discussed under § 761.120(d), the responsible party shall notify the appropriate EPA regional office (the Office of Pesticides and Toxic Substances Branch) and obtain guidance for appropriate cleanup measures in the shortest possible time after discovery, but in no case later than 24 hours after discovery.

(ii) Where a spill directly contaminates grazing lands or vegetable gardens, as discussed under § 761.120(d), the responsible party shall notify the appropriate EPA regional office (the Office of Pesticides and Toxic Substances Branch) and proceed with the immediate requirements specified under paragraph (b) or (c) of this section, depending on the source of the spill, in the shortest possible time after discovery, but in no case later than 24 hours after discovery.

(iii) Where a spill exceeds 10 pounds of PCB material (generally 1 gallon of PCB dielectric fluid) and is not addressed in paragraph (a)(1) (i) or (ii) of this section, the responsible party will notify the appropriate EPA regional office and proceed to decontaminate the spill area in accordance with this TSCA policy in the shortest possible time after