

March 26, 2009

VIA FAX & CERTIFIED MAIL

Lisa Jackson
Administrator
U.S. Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

**Re: Notice of intent to sue pursuant to the Toxic Substances Control Act,
15 USC §2619**

Dear Administrator Jackson:

Please be advised that Naomi Gonzalez intends to sue the New York City Department of Education (DOE) and New York School Construction Authority (SCA) for injunctive and declaratory relief, costs, and fees under the citizen's action provision of the Toxic Substances Control Act, 15 USC §§2601, *et seq.*, (TSCA).

Introduction and factual background

Ms. Gonzalez is a full-time teacher's assistant enrolled in a graduate program to become a school counselor. She lives in the Bronx, New York with her husband Henry Del Valle and their two children, Emelina and Devin, who attend first and fifth grades nearby at PS 178. Last spring, Ms. Gonzalez learned through an investigation carried out by the New York *Daily News* that the window caulking at her children's school is severely contaminated with poly-chlorinated biphenyls (PCBs).

PCBs threaten the integrity of major body systems, including the immune system, the endocrine system, and the neurological system, and they are probable human carcinogens. PCBs are also developmental toxins, disproportionately affecting children even after controlling for weight and blood volume. They were banned outright by Congress in TSCA in 1978 because of their hazardousness, but nevertheless continue to

pose serious risks to health for several reasons: (1) they persist in the environment rather than degrading; (2) they readily penetrate many solids, including human skin; (3) they volatilize into air and can be ingested through inhalation; and (4) they biomagnify in the food chain and bioaccumulate in the human organism. Finally, a growing body of peer-reviewed research documents the risks associated with exposure to even quite low background levels of PCBs.

A caulk sample from Emelina's and Devin's school sent by the *Daily News* to a state-certified laboratory contained over 100,000 parts per million (ppm)—that is, over ten percent—PCBs, in flagrant violation of TSCA. The chain of custody report and laboratory analysis are attached to this notice (Exhibit A). The level of PCBs found at the Del Valles' school is more than 2,000 times the 50 ppm limit above which the EPA has determined that PCBs *categorically* "present an unreasonable risk of injury to health within the United States," 40 CFR §761.20.

In total, the laboratory tested caulk from nine other schools and levels of PCBs exceeding 50 ppm were identified at six. Because PCBs, before they were banned, were routinely added to caulk to make it more elastic, there is good cause to believe that the six contaminated schools are not anomalous. It is instead likely that a large number of New York City schools house caulk containing hazardous and illegal levels of PCBs.

New York City parents have called on the DOE and SCA to test the caulking in window frames, door frames, and expansion joints in city schools built before the ban, and to remove contaminated caulk. The New York City Council passed a resolution to the same effect (NYC Council Res. No. 1416-2008). New York State legislation sponsored last year by Assembly Member Linda Rosenthal, which will be reintroduced shortly with additional support in the State House and Senate, would mandate testing in large districts. But despite the outcry—and the scientific evidence—the DOE and SCA have no plans to test caulk in any of their schools, including PS 178, the school attended by Emelina and Devin Del Valle. Instead, without questioning the laboratory results for the schools tested in the *Daily News* investigation, the DOE and the SCA have engaged in public denials of scientifically-established risk.

Because the prospective defendants have failed to eliminate, address, or indeed even to acknowledge this threat to children's and employees' health, Ms. Gonzalez will seek an injunction compelling them to conduct testing in New York City schools built or renovated in the relevant timeframe and to remove PCB-contaminated caulk as TSCA requires.

The role of the EPA

Before expanding briefly on the legal basis for the intended lawsuit, we emphasize on behalf of Ms. Gonzalez, other parents facing similar urgent circumstances, and ourselves that we hope not to have to file it.

Thus far in this matter, the EPA has failed to enforce the law, even in those schools where uncontested laboratory results have already revealed the presence of dangerous and plainly illegal levels of this potent toxin.

However, your inaugural memo to EPA employees has signaled a welcome shift in agency policy. You express vigorous commitments to science and enforcement of existing law—commitments that demand action here. Your memo also declares, with force and candor, that the EPA has not been adequate in its assessment and management of the risks posed by chemicals, and that it must improve. From the long-standing failure of the EPA to develop modern, age-calibrated indoor air standards for PCBs, to the agency's recent passivity in responding to serious, identified violations of its own PCB regulations, the circumstances surrounding PCBs in caulk constitute strong evidence to support your—again, most welcome—criticism.

We hope that over the course of the statutory waiting period following the filing of this notice, the EPA will act vigorously on the commitments and priorities you have articulated to require identification and remediation of PCB-contaminated caulk at PS 178 and beyond, making the intended litigation unnecessary. We would welcome the opportunity to discuss this problem with you and to work together on solving it. Along these lines, several NYLPI staff members will be attending the Columbia/WE ACT conference *Translating Science to Policy: Protecting Children's Environmental Health* next Monday, March 30, at which we understand you will be delivering an address, and we would very much appreciate a brief meeting if your schedule permits it; if it does not, we would hope to meet with you to discuss this in the near future.

Summary of Legal Analysis

I. Any use of PCBs in caulk violates TSCA.

While Congress, in passing TSCA in 1977, generally delegated broad regulatory authority on toxins to the EPA, it specifically banned PCBs. Under 15 USC §2605(e)(2)(A), as of January 1978, "no person may... use *any* polychlorinated biphenyl in *any* manner other than in a totally enclosed manner" (emphases added).

Congress also directed the EPA quickly to promulgate rules for the management, disposal, and labeling of PCBs, which the EPA did. 40 CFR §§761.1 *et seq.* These regulations are incorporated into TSCA by reference and have the full force of federal statutory law. 15 USC § 2614(1).

Under the regulations, TSCA's "totally enclosed manner" means "a manner which results in no exposure [of] humans or the environment to PCBs", and basically comprises non-leaking electrical equipment. 40 CFR § 761.20. The contaminated caulk in New York City schools self-evidently fails to meet this definition. Not only are humans and the environment exposed to PCBs in the caulk itself, they are also exposed to PCBs that have volatilized from caulk into indoor and outdoor air and migrated into mortar, brick, and soil.

TSCA and the PCB regulations provide for additional lawful uses of PCBs, i.e., lawful uses of PCBs in a non-totally enclosed manner. See 15 USC §§2605(e)(2)(B) and (3)(B); 40 CFR §§761.30 *et seq.* The use of PCBs in caulk, to increase its elasticity or for any other reason, is not among these specifically enumerated uses.¹

In short, any use of PCBs in the caulk in New York City schools is (1) not a totally enclosed use and (2) not an otherwise authorized use. The presence of PCBs in caulk at any level, including of course the highly elevated level of more than ten percent at PS 178, the Del Valles' school, is therefore indisputably unlawful.

II. Caulk containing PCBs at levels under 50 ppm is not exempt from regulation.

We anticipate that the EPA, if it undertakes enforcement action in this matter, will assert the discretion not to regulate PCBs at levels below 50 ppm. EPA representatives took this position on April 29, 2008 at a New York City Council hearing following the *Daily News* stories. Further, the EPA website has recently been modified to state both that caulk containing more than 50 ppm PCBs must be removed and that caulk containing lower levels of PCBs may remain in place. See <http://www.epa.gov/epawaste/hazard/tsd/pcbs/pubs/caulkremoval.htm> (visited March 17, 2009).

The establishment of a 50 ppm threshold for assessing the legal status of PCBs in caulk is an unauthorized shift in agency policy. As recently as July 26, 2007, EPA Region 2 Administrator Alan Steinberg sent a letter to Senator Charles Schumer addressing a

¹ "Use" encompasses ongoing use in caulk originally installed before the ban, as is made clear in the letter from Region 2 Administrator Alan Steinberg to Senator Charles Schumer that is quoted extensively below.

situation involving PCB-contaminated caulk in a school in Yorktown, New York. Regional Administrator Steinberg explained that PCBs may not be used in caulk at any levels:

The continued presence or use of caulk, which at French Hill [Elementary School] is contaminated with PCBs as high as 60,000 parts per million (ppm), is prohibited by the Toxics Substances Control Act (TSCA) and the Agency's PCB regulations at 40 CFR section 761 .20(a), except to the extent authorized by EPA rule. The federal PCB regulations at 40 CFR section 761.30 specifically list the authorized uses of PCBs for "non-totally enclosed" activities; i.e., activities that may expose human beings or the environment to PCBs. **Any non-totally enclosed use not specifically authorized under 40 CFR section 761.30 is prohibited. See 40 CFR section 761 .20 (a). The use of PCBs in caulk is not an authorized use and thus is a violation of section 6 (e) of TSCA.**

At French Hill, caulk that contains PCBs was applied to the building to seal the spaces surrounding windows and to act as a cushion in expansion joints. The caulk continues to be present around the windows and in expansion joints. This is a non-totally enclosed use because children and others can potentially be exposed to the PCB-containing caulk. Even though this caulk was applied before the regulations were developed, the caulk continues to serve its originally-intended purpose as a sealer and cushion. Thus, the school is continuing to make use of the PCB-containing caulk. This is not one of the types of non-totally enclosed uses allowed in the regulations. Therefore, the school's continued use of PCB-containing caulk is prohibited by TSCA and the PCB regulations.

(Steinberg letter to Schumer, July 26, 2007 (Exhibit B)) (emphasis added).

Not only does the exclusion of caulk containing less than 50 ppm PCBs conflict with the text of the PCB regulations and with Regional Administrator Steinberg's letter, it also in effect contravenes a ruling of the DC Circuit Court of Appeals. In *Environmental Defense Fund (EDF) v. EPA*, 636 F2d 1267 (DC Cir. 1980), the EPA had promulgated PCB regulations that exempted various substances, including caulk, containing less than 50 ppm PCBs. The regulations were successfully challenged by the EDF, and the agency was compelled to remove caulk and other sealants from the list of materials not subject to regulation at levels lower than 50 ppm. 636 F2d at 1279-1284; see also USEPA PCB Q&A Manual, 1994 Edition (Exhibit C), at vi-viii. In substance, the EPA's recent assertion of a right not to enforce the PCB regulations at low levels amounts to a repudiation of the EDF court's ruling. Further, even assuming that the judgment in *EDF* could be set aside and the regulations changed, the formal requirements for amendment, including the solicitation of public comment, have not been satisfied here. There is no legal authority for the EPA's change in policy.

More importantly, there is no good reason for it; to the contrary. Scientific examination of the risks associated with human exposure to very low background levels of PCBs is developing rapidly, and providing more, and more unnerving, support for the existence of those risks all the time.² It is known that PCBs are neurotoxins, immunotoxins, and animal carcinogens and that their presence in caulk can cause indoor air contamination and contamination of nearby soil. We emphasize again that PCBs have a particularly damaging impact on the developing brains, immune systems, and endocrine systems of children. Sound policy calls for the regulation of caulk in schools containing detectible levels of PCBs lower than 50 ppm.

It will be a long time before children grow up in a world that is completely cleansed of PCBs. But providing them with as nearly PCB-free an environment as is possible during the time they spend in school will improve their long-term health prospects and is clearly required by TSCA.

Conclusion and Relief Requested

The use of PCBs in caulk has only recently been recognized as a public health threat in the United States. It may be a problem of major proportions, extending beyond school buildings in New York City to encompass a significant portion of brick and mortar construction throughout the country over approximately 30 years (after 1950 or so until the ban). We acknowledge that to extinguish the associated risks will carry substantial cost.

We are certain that the benefits justify that cost.

Further, we would direct your attention, as well as that of the potential defendants, to the availability of federal stimulus money for school repair, as well as to *Yorktown Central School District v. Monsanto et al.* (SDNY Civil Action No. 07-CIV-8648 (SCR)). In *Yorktown*, the indemnification claims of a school district that remediated PCB-contaminated caulk and soil have recently survived summary judgment challenge by defendant Monsanto, the sole producer of PCBs in the United States.

² Even in 1980, the existence and severity of those risks with respect to non-human animals were well-known. The *EDF* court, writing in 1980, relying on documentation submitted by the EPA, summarized early animal studies of the harms associated with exposure to extremely weak concentrations of PCBs: "Experiments on monkeys indicate that diets with concentrations of PCBs as low as 10 ppm reduce fertility and cause stillbirths and birth defects...Concentrations below one ppb (part per billion) are believed to impair reproductivity of aquatic invertebrates and fish. Some birds suffered "severe reproductive failure" when fed diets containing concentrations of only ten ppm of PCBs." *EDF v. EPA, supra*, at 1270.

To be clear, the relief we seek includes (1) scientific sampling and confirmatory testing of caulk in window and door frames, expansion joints, and soil located near them at PS 178; (2) the safe removal of any contaminated caulk and soil at PS 178; (3) the same testing and remediation at the other schools in the *Daily News* study where PCBs were found; and (4) the same testing and remediation at all schools in New York City built during the period when PCBs were frequently added to caulk (1950 to 1980).

Again, we hope that litigation in this matter is not required to enforce the dictates of TSCA, and we look forward to discussing with you how to eliminate this threat to children's health in the near future.

Sincerely,

A handwritten signature in black ink, appearing to read 'MG', with a long horizontal flourish extending to the right.

Miranda Massie
Senior Staff Attorney –
Environmental Justice

cc: Chancellor Joel Klein, NYC DOE
President Sharon Greenberger, SCA

Exhibit A

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

DISPOSAL REQUIREMENTS: (To be filled in by Client)

NORTHEAST ANALYTICAL, INC.
 2190 Technology Drive, Schenectady, NY 12308
 Telephone (518) 346-4592 Fax (518) 381-6055
 www.nealab.com Information @nealab.com

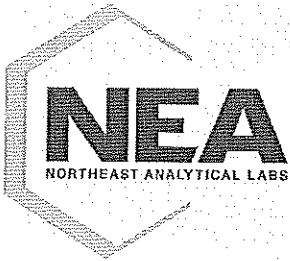
LR# # <01030108>

- RETURN TO CLIENT
 - DISPOSAL BY NORTHEAST ANALYTICAL
 - ARCHIVAL BY NORTHEAST ANALYTICAL
- Additional charges incurred for disposal (if hazardous) or archival. Call for details.

| | | | |
|--|--|---|--|
| CLIENT (REPORTS TO BE SENT TO): George Weymouth | | PROJECT# / PROJECT NAME: P.S. 178 - Selman Wayman | |
| PROJECT MANAGER: George Weymouth | | PROJECT LOCATION (CITY/STATE) ADDRESS: P.S. 178 - DE SELMAN WAYMAN BRUX, N.Y. 10475 | |
| PHONE: 978-663-9224 | SAMPLED BY: (Please Print) George Weymouth | REQUIRED TURN AROUND TIME: | |
| SAMPLING FIRM: | | NAME OF COURIER (IF USED): | |
| ELECTRONIC RESULTS FORMAT: PDF <input checked="" type="checkbox"/> EXCEL (CSV) <input type="checkbox"/> | | E-MAIL ADDRESS: wey@nealab.com | |
| FAXED RESULTS <input type="checkbox"/> | | Data Report: <input type="checkbox"/> CLP* <input type="checkbox"/> Certificates Only | |
| LAB SAMPLE ID AK00155 | | LAB SAMPLE ID (NEA USE ONLY) | |
| DATE/TIME 2/1/07 12:45PM | | GRAB/COMP | |
| MATRIX CAVILS | | NUMBER OF CONTAINERS 1 | |
| RECEIVED BY George Weymouth | | SIGNATURE George Weymouth | |
| DATE/TIME 3/23/07 | | DATE/TIME 1400 | |
| COMPANY NEA | | COMPANY NEA | |

* CLP LIKE DATA PACKAGE ADDITIONAL COST

3-MONTH-PCOC FORM 01 M/S (Revised June 1, 2005)



CERTIFICATE OF ANALYSIS
04/06/2007
GEORGE WEYMOUTH
6 AGAWAM CIR
BILLERICA, MA 01821
CONTACT: GEORGE WEYMOUTH

CUSTOMER ID: P.S. 178 WINDOW CAULK
MATRIX: SOLID
DATE RECEIVED: 03/23/2007 **TIME:** 14:00
SAMPLED BY: G. WEYMOUTH
CUSTOMER PO: N/A

NEA ID: AK02155 **NEA LRF:** 07030108-01
DATE SAMPLED: 02/11/2007 **TIME:** 12:45
PROJECT: P.S 178 - SELMAN WAXMAN
LOCATION: BRONX, NY
LAB ELAP#: 11078

| PARAMETER PERFORMED | RESULTS | PQL | UNITS | DATE ANALYZED | FLAGS |
|------------------------------------|---------|------|-------|---------------|-------|
| SW-846 8082 (PCB) | | | | | |
| Aroclor 1016 | ND | 3900 | ug/g | 04/05/2007 | U |
| Aroclor 1221 | ND | 3900 | ug/g | 04/05/2007 | U |
| Aroclor 1232 | ND | 3900 | ug/g | 04/05/2007 | U |
| Aroclor 1242 | ND | 3900 | ug/g | 04/05/2007 | U |
| Aroclor 1248 | ND | 3900 | ug/g | 04/05/2007 | U |
| Aroclor 1254 | 111000 | 3900 | ug/g | 04/05/2007 | U |
| Aroclor 1260 | ND | 3900 | ug/g | 04/05/2007 | U |
| Total PCB Amount > Reporting Limit | 111000 | | | | |

Notes: ND (Not Detected). Denotes analyte not detected at a concentration greater than the PQL.
 PQL (Practical Quantitation Limit). Denotes lowest analyte concentration reportable for the sample.

AUTHORIZED SIGNATURE:

William A. Kotas
 Quality Assurance Officer
 Robert E. Wagner
 Laboratory Director

Exhibit B



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

JUL 26 2007

Honorable Charles E Schumer
United States Senate
Washington, DC 20510

Dear Senator Schumer:

Administrator Stephen Johnson has asked me to respond to your letters dated May 15 and July 19, 2007, concerning your constituent, Dr. Ralph Napolitano and the regulation of PCB-containing caulk. Dr. Napolitano, the Superintendent of Schools for the Yorktown Central School District, has expressed concerns about EPA's response to the presence of polychlorinated biphenyl (PCB) contaminated caulk and soil at the French Hill Elementary School.

The Agency has issued standards for the removal of PCB-containing caulk and for the adjacent building material contaminated with PCBs. EPA Region 2 has primary responsibility for ensuring the proper use and management of PCBs in New York State. In this case our response has been primarily focused on reducing or eliminating the potential health risks to the children and personnel of French Hill as a result of the presence of PCBs. PCBs are persistent organic chemicals that are probable human carcinogens and are known to have significant toxic effects on the immune system, the reproductive system, the nervous system, and the endocrine system. The presence of PCBs in schools is of particular concern because PCBs are considered developmental toxins.

On June 21, 2005, EPA Region 2 staff met with representatives of the school district, the school district's consultant, the Westchester County Health Department and the New York State Department of Environmental Conservation to discuss the cleanup of PCB-contaminated soil at French Hill. This soil was located adjacent to the foundation of the school where windows and caulk had been replaced. My staff briefed the school district on the various regulatory options available for cleaning up the contamination, and the school district chose to clean up and dispose of the PCB-contaminated soil in accordance with the self-implementing provisions under the Agency's PCB regulations at 40 CFR section 761.61(a).

In its plan, the school specified that it would dispose of the soil in an authorized facility. However, through its actions of sending contaminated soil to a facility not authorized to receive PCB material, the school district violated the PCB regulations under 40 CFR section 761.61. This section of the regulations is very clear in defining the type

of facilities at which disposal of soil contaminated with PCBs is authorized. See 40 CFR section 761.61(a)(5)(v)(A).

The continued presence or use of caulk, which at French Hill is contaminated with PCBs as high as 60,000 parts per million (ppm), is prohibited by the Toxics Substances Control Act (TSCA) and the Agency's PCB regulations at 40 CFR section 761.20(a), except to the extent authorized by EPA rule. The federal PCB regulations at 40 CFR section 761.30 specifically list the authorized uses of PCBs for "non-totally enclosed" activities; i.e., activities that may expose human beings or the environment to PCBs. Any non-totally enclosed use not specifically authorized under 40 CFR section 761.30 is prohibited. See 40 CFR section 761.20 (a). The use of PCBs in caulk is not an authorized use and thus is a violation of section 6 (e) of TSCA.

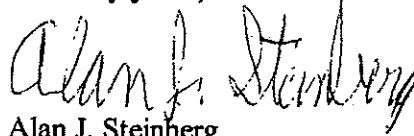
At French Hill, caulk that contains PCBs was applied to the building to seal the spaces surrounding windows and to act as a cushion in expansion joints. The caulk continues to be present around the windows and in expansion joints. This is a non-totally enclosed use because children and others can potentially be exposed to the PCB-containing caulk. Even though this caulk was applied before the regulations were developed, the caulk continues to serve its originally-intended purpose as a sealer and cushion. Thus, the school is continuing to make use of the PCB-containing caulk. This is not one of the types of non-totally enclosed uses allowed in the regulations. Therefore, the school's continued use of PCB-containing caulk is prohibited by TSCA and the PCB regulations. While we cannot comment on the specifics of enforcement matters, EPA will continue to work with the French Hill Elementary School to assure appropriate protection of the health of students and compliance with regulatory requirements.

With regard to Dr. Napolitano's assertion that the school district is being "singled out" in this matter, please be assured that EPA, both in past and present situations, is involved in discussions with other entities where PCB-contaminated caulk has been found. When EPA has become aware of PCB-contaminated materials in other school buildings, the subsequent discussions with those schools have resulted in the reduction of PCB-contaminated substances from the building or structure in accordance with the federal PCB regulations, including the removal of PCB-containing caulking and paint from window frames and the reduction of PCBs in contaminated porous masonry material.

EPA will continue to assess the issues related to exposure and remediation of PCB-containing caulking material to assure national consistency in protecting health and the well being of students.

I hope that this clarifies EPA's concerns and actions with regard to French Hill and PCB-containing caulk. If you have any questions, please feel free to call me or have your staff contact David Kluesner, Acting Chief of the Intergovernmental and Community Affairs Branch, at (212) 637-3657.

Sincerely yours,

A handwritten signature in cursive script that reads "Alan J. Steinberg". The signature is written in dark ink and is positioned above the printed name.

Alan J. Steinberg
Regional Administrator

Exhibit C

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

--- PCB Q & A MANUAL ---

An EPA TSCA assistance document designed to provide the regulated community with Agency interpretations to frequently posed questions.*

Prepared by:

OPERATIONS BRANCH
CHEMICAL MANAGEMENT DIVISION
OFFICE OF POLLUTION PREVENTION AND TOXICS

1994 EDITION

* This publication is an informal document, and persons are directed to the PCB final rules at Title 40 of the Code of Federal Regulations part 761 (40 CFR part 761) except where otherwise noted for specific legal requirements. This document provides information on the regulatory requirements for polychlorinated biphenyls that have been reflected in final regulations published through December 31, 1990. Any past versions of this document either final or in draft form are now obsolete.

- INTRODUCTION -

The term PCB is an acronym for polychlorinated biphenyl. PCBs are produced by attaching one or more chlorine atoms to a biphenyl molecule. As one of the most stable organic compounds known, their properties made them useful as dielectric fluid in various types of electrical equipment and heat transfer systems.

Monsanto Corporation was the principal manufacturer of PCBs for use as a fire-resistant or nonflammable insulating fluid in electrical and heat transfer equipment. In 1977, Monsanto voluntarily ceased production of PCBs because of widespread environmental concerns about the chemical.

PCBs were sold under the trade name "Aroclor." However, companies that used PCBs in the manufacture of transformers and capacitors, and for other uses, often used other trade names. Common trade names for PCBs include the following:

COMMON TRADE NAMES

| | | | |
|--------------|-----------|-----------|---------------------|
| Aroclor | Chlorinol | Fenclor | Nonflammable Liquid |
| Arochlor B | Chlorphen | Hyvol | Phenoclor |
| ALC | Clophen | Inclor | Pydraul |
| Apirolio | Clorinol | Inerteen | Pyralene |
| Asbestol | Diaclor | Keneclor | Pyranol |
| ASK | DK | Kenneclor | Pyroclor |
| Askarel* | Dykanol | Magvar | Saf-T-Kuhl |
| Adkarel | EEC-18 | MCS 1489 | Santotherm |
| Capacitor 21 | Elemex | No-Flamol | Santovac 1 and 2 |
| Chlorextol | Eucarel | Nepolin | |

*Askarel is also the generic term used for nonflammable insulating liquid in transformers and capacitors.

"Askarel" PCBs are chemical mixtures containing many different PCB congeners. They have a heavy, liquid, oil-like consistency, and weigh 10 to 15 pounds per gallon. They are very stable, exhibit low water solubility, low vapor pressure, low flammability, high heat capacity, low electrical conductivity, and have a favorable dielectric constant for use in electrical equipment.

When PCBs were manufactured as dielectric fluid for transformers, they were often mixed with certain organic solvents such as

chlorinated benzenes. Therefore, the dielectric fluids present in the electrical transformers containing PCBs are usually not pure PCB. The presence of these other chemicals influences the physical/chemical properties of the Askarel fluid.

PCBs are also produced as byproducts and process impurities in certain chemical manufacturing processes. They may vary from a single isomer to a variety of congeners and display different physical and chemical properties, depending on the number of isomers and the degree of chlorination (the number of chlorine atoms attached to the biphenyl molecule). PCBs with fewer chlorine atoms are, in general, less persistent, more water soluble, and more flammable than PCBs with more chlorine atoms.

HEALTH EFFECTS

PCBs are toxic and persistent. Available laboratory animal studies indicate an oncogenic potential whose degree varies with exposure. Epidemiological data are not now adequate to confirm or negate oncogenic potential in humans. Further epidemiological research is needed to correlate human and animal data. However, EPA finds no evidence to suggest that the animal data would not predict an oncogenic potential in humans.

PCBs can enter the body through the lungs, gastrointestinal tract, and skin. They circulate throughout the body and are stored in the body's fatty tissue. EPA finds that PCB exposure may cause negative reproductive effects and developmental toxicity in humans. Available data show that some PCBs have the ability to alter reproductive processes in mammals, sometimes even at doses that do not cause other signs of toxicity. Animal data and limited available data on humans suggest that prenatal exposure to PCBs can result in various degrees of developmental effects. Postnatal effects have been demonstrated on immature animals, following exposure to PCBs prenatally and via breast milk.

In some cases, chloracne may occur in humans exposed to PCBs. Severe cases of chloracne are painful and disfiguring, and may be persistent. Although the effects of chloracne are reversible, EPA considers these effects to be significant. For more information on the health effects of PCBs, The Response to Comments on the Health Effects of PCBs submitted by the Chemical Manufacturers Association and the Edison Electric Institute is available from the TSCA Assistance Information Service at 202-554-1404.

In addition to the toxic effects related to exposure to PCBs

alone, EPA is very concerned about the toxicity of the chemicals produced when PCBs are involved in fire-related incidents. These chemicals include polychlorinated dibenzofurans (PCDFs) and polychlorinated dibenzo-p-dioxins (PCDDs), both of which are believed to be much more toxic than PCBs themselves. Toxicological effects of these chemicals include embryotoxicity, teratogenicity, reproductive effects, and oncogenicity. Other compounds of toxicological significance may also be produced and released from fires involving PCB equipment. For further information on the health effects of dioxins, The Ambient Water Quality Criteria For 2,3,7,8-Tetrachlorodibenzo-p-dioxin is available from the TSCA Assistance Information Service at 202-554-1404.

ENVIRONMENTAL EFFECTS

Certain PCB congeners are among the most stable chemicals known and decompose very slowly once they are released into the environment. They remain in the environment and are taken up and stored in the fatty tissue of organisms. EPA has concluded that PCBs can be concentrated in freshwater and marine organisms. Available data show that PCBs affect the productivity of phytoplankton and the composition of phytoplankton communities. PCBs also cause deleterious effects on environmentally important freshwater invertebrates and impair reproductive success in birds and mammals.

PCBs are toxic to fish at very low exposure levels and can adversely affect their survival rate and reproductive success. The literature shows that various sublethal physiological effects on bone development and reproductive organs are attributed to exposure to PCBs. Phytoplankton are the primary food source directly or indirectly of all sea organisms. Also, phytoplankton are a major source of oxygen in the atmosphere. The transfer of PCBs up the food chain from phytoplankton to invertebrates, fish, and mammals can result in human exposure through consumption of PCB-containing food sources.

- HISTORY OF THE PCB REGULATIONS -

In recognition of the risks associated with PCBs and their widespread distribution throughout the environment, in 1976, the United States Congress enacted the Toxic Substances Control Act (TSCA), which banned with limited exceptions the manufacture,

processing, distribution in commerce, and use of PCBs other than in a "totally enclosed manner". Section 6(e) of TSCA also required EPA to promulgate regulations for the proper disposal of PCBs and develop clear and adequate warnings and instructions with respect to their processing, distribution in commerce, use and disposal. Section 16 of TSCA provides for penalties up to \$25,000 a day per violation of section 6(e) of the Agency's PCB regulations.

PCB marking and disposal regulations were published in the Federal Register on February 17, 1978 (43 FR 7150). The PCB "Ban Rule" (Federal Register May 31, 1979) included provisions banning the manufacture, processing, distribution in commerce, and use of PCBs which became effective on July 2, 1979 (44 FR 31514).

The May 31, 1979 Rule:

- Designated all intact, nonleaking capacitors, electromagnets and transformers, other than railroad transformers, as "totally enclosed," which allowed their use without restrictions or conditions;
- Established a 50 ppm PCB regulatory cutoff for manufacturing, processing, distribution in commerce, and use; and
- Authorized the use of PCBs under specific conditions and time constraints for 11 activities. These activities were:
 - Servicing transformers (other than railroad transformers),
 - Use in and servicing of railroad transformers,
 - Use in and servicing of mining equipment,
 - Use in heat transfer systems,
 - Use in hydraulic systems,
 - Use in carbonless copy paper,
 - Use in pigments,
 - Use in and servicing of electromagnets,
 - Use in natural gas pipelines,
 - Use in small quantities for research and development, and
 - Use as a mounting medium in microscopy.

The Environmental Defense Fund (EDF) challenged several provisions of the May 1979 rule, and in October of 1980, the U.S. Court of Appeals for the District of Columbia ruled that there was insufficient evidence in the record to support several provisions of the May 1979 rule. Specifically, the Court struck

down the classification of transformers, capacitors, and electromagnets as "totally enclosed," and the regulatory cutoff at 50 ppm for the manufacture, processing, distribution in commerce, and use of PCBs. The 11 use authorizations contained in the May 1979 rule remained in effect. EPA, EDF, and certain industry representatives filed a joint motion seeking a stay of the Court's mandate until further rulemaking could be completed. The Court granted the stay.

On August 25, 1982, EPA issued a final rule governing the use and servicing of electrical equipment containing PCBs (47 FR 37342). This final rule was issued as a result of the Court's decision to strike down the May 1979 rule's classification of transformers, capacitors, and electromagnets as "totally enclosed." In the August 25, 1982 rule, EPA authorized the use of electrical equipment containing PCBs with certain conditions and restrictions intended to minimize human and environmental exposures to PCBs.

On October 21, 1982, EPA issued part one of a two-part rule to address the 50 ppm regulatory cutoff (47 FR 46980). This final rule addressed closed and controlled waste manufacturing processes. EPA submitted a plan to the Court on November 1, 1982, that requested a further extension of the stay of mandate for the 50 ppm cutoff and presented plans for the completion of the rulemaking on this issue. (The October 21, 1982 rule was superseded later by the "Uncontrolled PCB's Rule" issued on July 10, 1984.)

In addition to issuing rules as a result of the Court decision in October 1980, EPA also promulgated an amendment to the Use Authorization for Railroad Transformers which originally appeared in the May 1979 rule. On January 3, 1983, EPA published a final rule amending and extending the use authorization for PCB railroad transformers (48 FR 124).

On March 30, 1983, EPA promulgated a procedural change in the approval process for mobile and non-unique disposal facilities (48 FR 13181). The authority for granting or denying approval of these facilities was transferred from the regions to EPA headquarters.

On July 10, 1984, several rulings were made final. One rule addressed individual and class petitions for exemption from the prohibition against the manufacture, processing, and distribution in commerce of PCBs (49 FR 28154). The use of small quantities of PCBs for use in research and development was authorized indefinitely.

On July 10, 1984, EPA also issued an amendment to the October 21, 1982 rule (49 FR 28172). This "Uncontrolled PCB's Rule" completed part two of EPA's earlier 1982 rulemaking regulatory cutoff for PCBs, which was overturned in the 1980 Court decision. This rule excluded additional processes from regulation based upon EPA's determination that these processes do not present an unreasonable risk of injury to human health or to the environment. Among other things, the rule permitted the manufacturing, processing, distribution in commerce, and use of inadvertently generated PCBs and recycled PCBs under limited circumstances. This amendment replaced the terms "Closed Manufacturing Process" and "Controlled Waste Manufacturing Process" with "Excluded Manufacturing Process." PCBs with concentrations below 50 ppm, under certain conditions and restrictions, were authorized for use in hydraulic and heat transfer fluid and in the compressors and liquid of natural gas pipeline systems.

On November 8, 1984, a final rule was issued that revised the definition of "Totally Enclosed Manner" (49 FR 44634). It changed from "any manner that will ensure that any exposure of human beings or the environment to any concentration of PCBs will be insignificant, that is, not measurable or detectable by any scientifically acceptable method" to "any manner that will ensure no exposure of human beings or the environment to any concentration of PCBs."

The "PCB Transformer Fires Rule" was published on July 17, 1985 (50 FR 29170). This final rule amended portions of the August 25, 1982 electrical equipment rule by placing additional restrictions and conditions on the use of PCB Transformers (electrical transformers containing 500 ppm or greater PCBs). This rule prohibited the use of higher secondary voltage (480 volts and above) network PCB Transformers in or near commercial buildings after October 1, 1990. By October 1, 1990, it required the installation of enhanced electrical protection on lower secondary voltage network PCB Transformers and radial PCB Transformers in use in or near commercial buildings. It prohibited further installation of PCB Transformers in or near commercial buildings after October 1, 1985 and required the registration by December 1, 1985 of all PCB Transformers with fire response personnel and building owners. Further, the ruling required, by December 1, 1985, the marking of the exterior of all PCB Transformer locations and the removal of all stored combustibles located near PCB Transformers.

This rule also required owners of PCB Transformers involved in fire-related incidents to immediately notify the National Response Center and to take measures as soon as possible to

contain any potential releases of PCBs or incomplete combustion products to water.

A clarification of the July 17, 1985 rule was published on December 31, 1986 (51 FR 47241). It addressed the following areas of the regulation:

- the PCB Transformer registration requirement,
- the requirement for the removal of stored combustibles,
- the requirement to notify the National Response Center of fire-related incidents,
- the definition of commercial building,
- the status of mineral oil transformers found to have over 500 ppm PCBs,
- the ban on the installation of PCB Transformers in or near commercial buildings,
- the requirement for labelling of exterior access to PCB Transformer locations.

The PCB Spill Cleanup Policy was published on April 2, 1987 (52 FR 10688). The Policy establishes methods of cleanup and cleanup levels of spills containing PCBs at concentrations of 50 ppm or greater. EPA uses the Policy standards to determine the adequacy of cleanup for penalty purposes. It specifies cleanup of PCBs to different levels depending on the spill location, the potential for exposure to residual PCBs remaining after the cleanup, the concentration of the PCBs initially spilled and the nature and size of the population potentially at risk of exposure. The Policy imposes the most stringent requirements on areas where there is the greatest potential for human exposure to spilled PCBs; less stringent requirements where the type and degree of contact present lower potential exposure; and even less stringent requirements where there is little potential for any direct human exposure.

While the Policy applies to the majority of spill situations, it does provide for exceptional situations that may require additional cleanup or less stringent standards at the discretion of the EPA regional office.

On June 27, 1988, EPA published final amendments to the "Uncontrolled PCBs Rule" (Federal Register July 10, 1984) which excluded additional materials containing less than 50 ppm PCBs from regulation (53 FR 24206). The amendments did the following: 1) eliminated the requirement that maintenance workers wear Viton^R elastomer gloves when servicing heat transfer and hydraulic systems; 2) allowed the use of and distribution in

commerce of certain equipment and materials that have been adequately decontaminated in accordance with the applicable PCB spill cleanup policies in effect at the time of the cleanup; 3) maintained the 3 parts per billion (ppb) water discharge limit from paper processing mills or allowed an equivalent mass-based limitation for water discharges to be met; 4) prohibited the burning for fuel of oil containing 2 to 49 ppm PCBs in nonindustrial boilers and furnaces; and 5) excluded from the ban on processing, distribution in commerce, and use certain products containing less than 50 ppm PCBs. Remaining prohibitions on PCBs less than 50 ppm are as a dust control agent, sealant, coating, inert ingredient in pesticides or herbicides, road oiling agent, use as a rust preventative, and use as a fuel in nonindustrial boilers and furnaces. Readers should consult with their State Department of Environmental Quality or equivalent to determine if there are any additional regulations the State may have for PCBs less than 50 ppm. A document titled "Summary of State PCB Management Programs" is available through the TSCA Assistance Information Service (202-554-1404).

On July 19, 1988, EPA published amendments (53 FR 27322) to the "PCB Transformer Fires Rule" (Federal Register July 17, 1985). The amendments include: 1) modifying the enhanced electrical protection provision for nonsidewalk lower secondary voltage network PCB Transformers; 2) prohibiting the use, as of October 1, 1993, of all lower secondary voltage network PCB Transformers located in sidewalk vaults; 3) allowing the installation of PCB Transformers in or near a commercial building only for reclassification or emergency purposes; 4) allowing the use under certain limited conditions of an alternate label (other than M_L) on the exterior of PCB Transformer locations; and 5) setting up a schedule of compliance for mineral oil transformers thought to be PCB contaminated (i.e., 50-499 ppm) and later determined to be a PCB Transformer (i.e., ≥ 500 ppm).

The 1985 PCB Transformer Fires Rule regulated the use of transformers in an attempt to reduce fire-related risks posed by the use of these transformers. After publication of the August 21, 1987 proposed amendment to the PCB Transformer Fires Rule, EPA received comments indicating that complete deenergization of the transformer would not be necessary to prevent transformer rupture. The comment stated that deenergization of the faulted phase (partial deenergization) would be sufficient to prevent transformer rupture. After further review, EPA determined that partial deenergization may be acceptable electrical protection for low voltage radial PCB transformers under some circumstances.

By final rule dated November 26, 1990 (55 FR 49043) EPA amended the regulations concerning enhanced electrical protection

requirements for low voltage radial transformers containing PCBs and extended the deadline for compliance for these types of transformers to February 25, 1991. This rule did not alter any other enhanced electrical protection requirements. It provided that partial deenergization, i.e., deenergizing only the faulted phase(s) in a low voltage radial transformer, may, in some circumstances, be equivalent to total deenergization of such transformers in the event of a high current fault. This rule states that partial deenergization will be equivalent to total deenergization only if the transformer configuration and associated safety factors demonstrate that partial deenergization is consistent with EPA's goals of avoiding fault related failures, tank rupture, and fires in PCB Transformers. Owners and operators of low voltage radial transformers in or near commercial buildings who wish to utilize partial deenergization are required to install this type of electrical protection using good engineering practices.

There had been increasing concern on the part of Congressional oversight committees about certain aspects of EPA's disposal program for polychlorinated biphenyl (PCB) wastes. In particular, the most frequently cited concerns were: (1) the lack of an effective tracking system that would track PCB wastes in a "cradle-to-grave" fashion; and (2) the lack of sufficient oversight of the activities and qualifications of the PCB waste brokers and other intermediate storers who may store the PCB wastes owned by others.

The PCB Notification and Manifesting rule published on December 21, 1989 (54 FR 52716) adds to the TSCA disposal regulations a PCB waste tracking system based on the RCRA model for the tracking of hazardous wastes. At the heart of the tracking system are the requirements that PCB waste handlers (disposers, commercial storers, transporters, and generators with PCB storage areas) notify EPA of their PCB waste activities, and use the RCRA Uniform Manifest in connection with their shipments of regulated PCB wastes.

Second, this rule adds to the existing PCB storage facility standards a requirement that certain commercial storers of PCB wastes obtain written approvals from the EPA Regional Administrators. The issuance of these commercial storer approvals is conditioned on an evaluation of the applicant's qualifications to engage in the business of PCB waste storage, and the submission of closure plans and proof of financial responsibility for proper closure of PCB storage areas.

In addition, the rule includes additional recordkeeping and reporting requirements that will complete the PCB waste tracking

function, as well as facilitate EPA's enforcement of the PCB disposal regulations.

On November 2, 1990 (55 FR 46470) EPA proposed a rule which addresses the method by which permits issued under 40 CFR Part 761 are to be revoked or suspended. The criteria and procedures for suspensions and revocations, proposed in the PCB Permit Revocation Rule, will apply to those approvals required by the 1989 Notification and Manifesting rule, as well as to the disposal approvals which are currently required by the regulations. At the time of publication of this document, the Permit Revocation rule had not been published in final form.

- PCBs IN THE WORKPLACE -

There are Occupational Safety and Health Administration (OSHA) regulations governing PCBs in the workplace. OSHA has in place two 8-hour time-weighted averages (TWAs) for chlorodiphenyl. For chlorodiphenyl containing 42 percent chlorine, the TWA is 1.0 mg/m³ of workplace air. For chlorodiphenyl containing 54 percent chlorine, the TWA is 0.5 mg/m³ of workplace air. An employee's exposure to PCBs in any 8-hour workshift of a 40-hour week cannot exceed these concentrations. Further, employers are required to ensure a safe workplace under OSHA regulations. If specific standards are not applicable, this general requirement for a safe workplace would apply.

The National Institute for Occupational Safety and Health (NIOSH) recommends a more stringent air standard for worker exposure of 1.0 µg/m³.

EPA's rules do not directly regulate workers, but the rules do restrict or prohibit certain PCB activities and reduce the amount of PCBs in the workplace. Therefore, as a result of EPA's PCB rules the number of workers exposed to PCBs has been dramatically reduced. EPA rules prohibit PCB Transformer rebuilding (except for railroad transformers) that involves removal of the transformer's coil. Prohibitions have terminated activities that could result in the major long-term occupational exposure to high concentrations of PCBs. However, worker exposure can still occur as a result of PCB spills and authorized servicing operations for PCB Transformers.

-EXCLUDED PCB PRODUCTS-

In the Federal Register of July 10, 1984 (49 FR 28172), EPA published the "Uncontrolled PCBs" rule. This final rule was a result of the "EDF v. EPA" lawsuit in which the Environmental Defense Fund (EDF) challenged EPA's general 50 parts per million (ppm) regulatory cutoff for PCBs. This challenge was successful and on October 30, 1980, the U.S. District Court of Appeals found that there was not substantial evidence to support EPA's original decision to exclude generally from regulation all materials containing PCBs at concentrations less than 50 ppm. Consequently, EPA undertook the regulation of very low concentration PCBs (less than 50 ppm).

The 1984 "Uncontrolled PCBs" rule among other things, regulated manufacturing processes generating low concentration PCBs in other than "closed" and "controlled waste" processes. On the date the rule became effective, the Court lifted its stay in the EDF lawsuit, which had the effect of banning any activity involving any quantifiable level of PCBs unless that activity was specifically excluded, exempted, or authorized by regulation. The practical effect of the Court's action was to make illegal many activities which were neither anticipated nor evaluated during the rule's development and which presented no unreasonable risk to health or the environment.

Consequently, on June 27, 1988 (53 FR 24206), EPA published in the Federal Register a set of amendments to the 1984 PCB "Uncontrolled Rule." These amendments have excluded the majority of low-level PCB activities (less than 50 ppm) from regulation. In other words, many low-level PCB activities which became prohibited with the "Uncontrolled PCBs" rule have returned to unregulated status.

The amendments to the 1984 rule include a generic exclusion for products containing less than 50 ppm PCBs using the new term "Excluded PCB Products" (761.3). Generally, the processing, distribution in commerce, and use of "Excluded PCB Products" is now unregulated. "Excluded PCB Products" are defined as PCBs which appear at concentrations less than 50 ppm in products including, but not limited to, inadvertently generated PCBs (see 761.1(f)), PCB contaminated products (e.g., investment casting waxes), PCB contaminated recycled fluids and equipment, and used oils, provided that:

- The products were legally manufactured, processed, distributed in commerce, or used before October 1, 1984.
- The products were legally manufactured, processed, distributed in commerce, or used pursuant to authority granted by EPA by regulation, by exemption, by settlement agreement, or pursuant to other agency-approved programs.
- The resulting PCB concentration (< 50 ppm) is not a result of any dilution.

NOTE: This rule does not affect land application practices involving sewage sludge or other nonhazardous solid wastes which contain PCBs at concentrations less than 50 ppm. These activities are regulated under other EPA programs.

EPA adopted the generic exclusion for "Excluded PCB Products" based upon the Agency's determination that the use, processing, and distribution in commerce of these products with less than 50 ppm PCB contamination will not generally present an unreasonable risk to health or the environment. However, EPA is aware that some product uses and processing, particularly the burning and recycling of used oil, may present unique exposure and risk considerations.

USED OIL - History

Under the PCB "Uncontrolled Rule," there was considerable confusion regarding the status of used oil containing less than 50 ppm PCBs. In the earlier 1979 "PCB Ban Rule", used non-PCB oil (less than 50 ppm) was unregulated except for its reuse as a dust suppressant, sealant, or coating which was prohibited at any detectable PCB level. However, with the overturning of the general 50 ppm regulatory cutoff by the EDF v. EPA decision, activities (use, processing, or distribution in commerce) involving less than 50 ppm PCBs became prohibited on October 1, 1984, unless specifically authorized, exempted, or excluded by regulation. Prior to publication of the PCB "Uncontrolled Rule" amendments, EPA had specifically authorized only three reuses of oil products with less than 50 ppm PCBs:

- The reuse of dielectric fluids (as dielectrics).