VARIOUS MANUFACTURERS, FOR U.S. NAVY
MSDS for ANTIFOULING COMPOUND, NAVY FORMULA 184

## 1 - Site Specific Information

NO Site Specific Information on file for this Chemical

## 2 - General Information RATING: 3-0-0

MANUFACTURER'S NAME:
Naval Surface Warfare Center,DD, Coastal Systems Station
Code A63, Bldg 490, 6703 West Highway 98
Panama City, Florida 32407-7001
(904) 234-4442 or Autovon 436-4442

CHEMICAL NAME AND SYNONYMS:
Antifouling Compound, Navy Formula 184

CHEMICAL FAMILY:
Mixture, primarily mercury salt and polychlorinated biphenyl

FORMULA:
Mixture

DATE OF PREPARATION:
28 October, 1999

PREPARED BY:
NAVSURFWARCEN, Dahlgren Division, Coastal Systems Station, Code A63

DISCLAIMER:
The information provided below is believed to be accurate and represents the best information available to us for the individual hazardous materials in this mixture. However, we make no warranty, express or implied, with respect to such information and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes.

## 3 - Hazardous Ingredients CONTAINS PCB'S AND MERCURY SALT

| MATERIAL | % | TLV (Units) |
|---|---|---|
| Arochlor 1254 | 40-47 | * 0.5 mg/m3 OSHA PEL 8-hr TWA |
| | | * 0.5 mg/m3 ACGIH TLV 8-hr TWA |
| | | * 1 mg/m3 AGCIH STEL |
| Mercurous Chloride | 33-37 | 0.1 mg(Hg)/m3 ACGIH TLV 8-hr TWA - skin |
| Silica | 13-20 | 20 mppcf OSHA PEL 8-hr TWA |

## 3 - Hazardous Ingredients CONTAINS PCB'S AND MERCURY SALT (continued)

* Values are for airborne exposure (vapor); Adsorption through skin may add to overall exposure. AVOID SKIN CONTACT.

## 4 - Physical Data

BOILING POINT(INDICATE IF "F" OR "C"):
Not determined
VAPOR PRESSURE(mm Hg):
.00006 mm Hg @ 100 F for Arochlor 1254
VAPOR DENSITY (AIR = 1):
No information found
SPECIFIC GRAVITY (H2O=1):
No information found
PERCENT VOLATILE BY VOLUME (%):
No information found
EVAPORATION RATE ( = 1):
No information found
SOLUBILITY IN WATER:
.0002 g/100 g H2O @ 25 C
APPEARANCE AND ODOR:
gray semisolid with a slight petroleum odor.

## 5 - Fire and Explosion Hazard Data

FLASH POINT (METHOD USED):
No flash point
FLAMMABLE LIMITS:
LEL: none UEL: none
EXTINGUISHING MEDIA:
Use any means suitable for extinguishing surrounding fire.
SPECIAL FIRE FIGHTING PROCEDURES:
In the event of fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.
Fire fighting equipment should be thoroughly cleaned and decontaminated after use.
UNUSUAL FIRE AND EXPLOSION HAZARDS:
PCBs are fire-resistant compounds. They may decompose to form CO, CO2, HCl, phenolics, aldehydes, and other toxic combustion products under severe conditions such as exposure to flame or hot surfaces.

## 5 - Fire and Explosion Hazard Data (continued)

At temperatures of 600-650 C in the presence of excess oxygen PCBs may form polychlorinated dibenzofurans (PCDFs).

## 6 - Health Hazard Data

TOXICITY:

Mercurous Chloride:
Oral rat LD50 : 210 mg/kg. Mutation references cited (RTECS, 1982)

Arochlor 1254:
Oral rat LD50 : 8.65 g/kg

There are literature reports that PCBs can impair reproductive functions in monkeys. The National Cancer Institute performed a study in 1977 using Arochlor 1254 with both sexes of rats and found that the substance was not carcinogenic.

The consistant finding in animal studies is that PCBs produce liver injury following prolonged and repeated exposure by any route, if the exposure is of sufficient degree and duration.

Numerous epidemiological studies of humans, both occupationally exposed and non-worker environmentally exposed populations, have not demonstrated any causal relationship between PCB exposures and chronic human illnesses such as cancer or neurological or cardiovascular effects. PCBs can cause dermatalogical symptoms; however, these are reversible upon removal of exposure source.

PCBs are identified as hazardous chemicals under criteria of the OSHA Hazard Communication Standard (29 CFR 1910.1200). PCBs have been listed in the International Agency for Research on Cancer (IARC) Monographs (1987) - Group 2A and in the National Toxicology Program (NTP) Annual Report on Carcinogens (fourth).

EFFECTS OF OVEREXPOSURE:

INHALATION:

Mercurous Chloride - Mild irritant and nuisance dust. Mercury poisoning is possible by absorption through respiratory tract but this is self-limiting due to the coughing or sneezing which are the principal symptoms of inhalation.

Arochlor 1254 - Chronic exposure may cause liver damage. Inhalation exposure not likely under normal use.

Silica - Chronic inhalation of silica has been shown to produce pneumoconiosis. Airborne silica exposure not likely under proper use.

INGESTION:

Mercurous Chloride - Toxic! Irritant and severe purgative in the

6 - Health Hazard Data (continued)

gastro-intestinal system. Toxicity is low due to usually prompt elimination. Fatal mercury poisoning can occur if as little as 30-40 mg/kg is retained. Symptoms may include metallic taste, thirst, abdominal pain, vomiting, and diarrhea.
Arochlor 1254 - This material is slightly toxic.

SKIN CONTACT:
Mercurous Chloride - May cause irritation.
Arochlor 1254 - PCBs can be absorbed through intact skin. Local action on skin is similar to that of common organic solvents where contact leads to removal of natural fats and oils with subsequent drying and cracking of the skin. potential exists for contracting chloracne.

EYE CONTACT:
Mercurous Chloride - No adverse effects expected but dust may cause mechanical irritation.
Arochlor 1254 - PCB contact is moderately irritating to eye tissues.

CHRONIC EXPOSURE:
Mercurous Chloride - Chronic exposure through any route can produce central nervous system damage. Symptoms may include muscle tremors, personality and behavior changes, metallic taste, loosening of the teeth, digestive disorders and skin rashes.
Arochlor 1254 - Chronic exposure to PCBs results in liver damage.

AGGRAVATION OF PRE-EXISTING CONDITIONS:
Mercurous Chloride - Persons with nervous disorders, or impaired kidney or respiratory function, or a history of allergies or a known sensitization to mercury may be more susceptible to the effects of the substance.
Arochlor 1254 - Persons with chloracne or tendency to develop skin rashes and persons with liver damage should avoid contact with material.

EMERGENCY AND FIRST AID PROCEDURES:

INHALATION:
Remove to fresh air. Get medical attention for any breathing difficulty or if respiratory irritation or skin rash persists.
INGESTION:
Do not induce vomiting. Call a physician immediately. Gastric lavage by qualified medical personnel may be

6 - Health Hazard Data (continued)

indicated if large amounts are ingested.

SKIN EXPOSURE:

Wash exposed area thoroughly with soap and water. Contaminated clothing should be removed and cleaned prior to re-use. Seek medical attention if skin rash develops.

EYE EXPOSURE:

Eyes should be irrigated immediately with copious amounts of water for at least 15 minutes, occasionally lifting upper and lower eyelid. Seek medical attention.

7 - Reactivity Data

STABILITY:

Material is stable under normal conditions of useage.

CONDITIONS TO AVOID: none known

INCOMPATIBILITY (MATERIALS TO AVOID):

Bromides, Iodides, Ammonia, Alkalies, Cyanides, Chlorides, Copper and Lead Salts, Silver Salts, Carbonates, Sulfides, Soap, Lime Water, Iodoform, and Hydrogen Peroxide.

HAZARDOUS DECOMPOSITION PRODUCTS:

Oxides of Mercury and Halogen, possibly also free, Ionic Halogen, Oxides of Carbon, and HCl.

HAZARDOUS POLYMERIZATION:

Will not occur.

CONDITIONS TO AVOID: none known.

8 - Spill or Leak Procedures DISPOSE AND STORE IAW REGULATIONS

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Care should be taken to prevent entry of PCBs into the environment through spills, leakage, use, vaporization or improper disposal. PCBs can accumulate in the environment and adversely affect some animals and aquatic life. PCBs have low water solubility but are strongly bound to soils and sediments, and are slowly degraded by natural processes in the environment.

Cleanup and disposal of PCB items are strictly regulated by federal law. Regulations are found in 40 CFR Part 761. Consult these regulations as well as any applicable state and local regulations prior to disposal of any PCB items or PCB contaminated items.

In event of a leak or spill the following steps should be taken

## 8 - Spill or Leak Procedures DISPOSE AND STORE IAW REGULATIONS (continued)

immediately:
All non-essential personnel should leave the spill or leak area. Spill/leak should be contained. Loss to sewer systems, navigable waterways and streams should be prevented. Spills/leaks should be removed promptly by means of absorptive material, such as sawdust, vermiculite, dry sand, clay, dirt or other similar materials, or trapped and removed by pumping or other suitable (traps, drip pans, trays, etc.).
Persons entering the spill/leak area must wear appropriate personal protective equipment and clothing as needed. See Section 9, Special Protection Information, for details.
Personnel trained in emergency response procedures and protected against the attendant hazards should shut off leak sources, clean up spills, control and repair leaks, and fight fires in PCB areas.
Various state and local regulations may require immediate reporting of PCB spills and may also define spill clean-up levels. Consult appropriate regulatory officials for information relating to spill reporting and clean-up.

WASTE DISPOSAL METHOD:
All wastes and residues should be collected, placed in proper containers, marked and disposed of as prescribed by Environmental Protection Agency (EPA) 40 CFR Part 671 and applicable state and local regulations.

## 9 - Special Protection Information

RESPIRATORY PROTECTION (SPECIFY TYPE):
Avoid breathing vapor or mist. Use NIOSH/MSHA approved equipment when airborne exposure limits are exceeded as given in Section 3, Hazardous ingredients. Full facepiece equipment is recommended and, if used, replaces need for face shield and/or chemical splash goggles. High airborne concentrations may require use of self-contained breathing apparatus or supplied-air respirator. Respiratory protection programs must be in compliance with 29 CFR Part 1910.134.

VENTILATION:
Provide natural or mechanical ventilation to control exposure levels below airborne exposure limits as given in Section 3, Hazardous Ingredients. If practical, use local mechanical exhaust ventilation at sources of air contamination.

## 9 - Special Protection Information (continued)

PROTECTIVE GLOVES:

Wear appropriate chemical resistant gloves to prevent skin contact. Viton is recommended but consult glove manufacturer to determine appropriate type of glove for the given application. Wash immediately if skin is contaminated. Remove contaminated gloves and clean before re-use or dispose of in accordance with local, state, and federal regulations.

EYE PROTECTION:

Wear chemical splash goggles and have eye baths available where there is significant potential for eye contact.

OTHER PROTECTIVE EQUIPMENT:

Wear appropriate protective clothing to prevent skin contact. Wear chemically resistant clothing such as rubber apron when skin contact is likely. Wash skin immediately if skin is contaminated. Remove contaminated clothing promptly and launder before re-use or dispose of in accordance with all local, state, and federal regulations. Clean protective equipment before re-use. Provide a safety shower at any location where skin contact can occur. Wash thoroughly after handling.

## 10 - Special Precautions

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

Store in accordance with all local, state, and federal regulations.

OTHER PRECAUTIONS:

Care should be taken to prevent entry into the environment through spills, leakage, use, vaporization, or disposal of material.