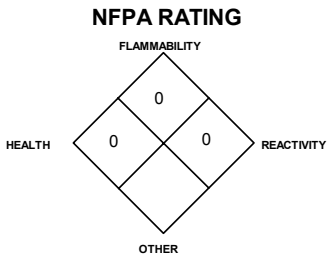
MATERIAL SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI and Canadian WHMIS Standards



PART I *What is the material and what do I need to know in an emergency?*

1. PRODUCT IDENTIFICATION

CHEMICAL NAME; CLASS:	**ORCA GEL PAC** Document Number: 002072
PRODUCT USE:	Refrigerant Operations
SUPPLIER/MANUFACTURER'S NAME:	AIRGAS INC.
ADDRESS:	259 N. Radnor-Chester Road Suite 100 Radnor, PA 19087-5283
BUSINESS PHONE:	1-610-687-5253
EMERGENCY PHONE:	CHEMTREC: 1-800-424-9300 International: 703-527-3887 (Call Collect)
DATE OF PREPARATION:	March 27, 1998

2. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	w/w %	EXPOSURE LIMITS IN AIR					
			ACGIH		OSHA			
			TLV ppm	STEL ppm	PEL ppm	STEL ppm	IDLH ppm	OTHER
Polymer 1	Proprietary	1-5	NE	NE	NE	NE	NE	Manufacturer's Limit: 0.05 mg/m^3 (American Dry Ice Corp.; applicable to dusts of dehydrated product less than 10 microns in size only)
Polymer 2	Proprietary	1-5	NE	NE	NE	NE	NE	NE
Water	7732-18-5	> 90%	NE	NE	NE	NE	NE	NE

NE = Not Established. C = Ceiling Limit See Section 16 for Definitions of Terms Used

NOTE (1): ALL WHMIS required information is included in appropriate sections based on the ANSI Z400.1-1993 format.

NOTE (2): The specific identities of this product's components are not released, because they are being claimed as proprietary. All hazard information pertinent to this product has been presented in the remaining sections of this Material Safety Data Sheet, per the requirements of U.S. Federal Occupational Safety and Health Hazard Communication Standard (29 CFR 1910.1200) and the Canadian Workplace Hazardous Materials Identification System Information. Airgas Carbonic West will release the information to users of this product if the conditions stated in the regulations are met.

3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW: This product is a clear, colorless gel. There are no significant health, reactivity, or flammability hazards associated with this product. Emergency responders should be aware that floors contaminated with released product can be very slippery.

SYMPTOMS OF OVEREXPOSURE BY ROUTE OF EXPOSURE: The most significant routes of occupational overexposure is contact with skin and eyes. The symptoms of overexposure to this product are as follows:

INHALATION: Inhalation of this product is not anticipated to be a significant route of entry for this product. In the unlikely event that the water in the polymer mixture is completely evaporated away, inhalation of the resulting dusts may be slightly irritating. Symptoms of such exposure (e.g., coughing, nasal discomfort) are generally alleviated when over-exposure ends.

CONTACT WITH SKIN or EYES: This product is a physical irritant to contaminated eyes. Eye contact may lead to pain and redness. Symptoms of exposure are generally alleviated when overexposure ends. This product is not anticipated to be irritating to the skin. If the product is frozen, prolonged contact may result in frostbite.

SKIN ABSORPTION: Skin absorption is not reported to be a significant route of exposure for any component of this product.

INGESTION: Ingestion is not anticipated to be a significant route of occupational overexposure for this product. In the unlikely event that this product is ingested, expansion of the polymer can be extremely damaging to the digestive system, especially if ingested in very large quantity. Symptoms of such exposure may include stomach pains and indigestion. Severe ingestion exposures may be fatal.

INJECTION: Injection is not anticipated to be a significant route of exposure for this product. If injection via a polymer-contaminated object occurs, local swelling and redness may result.

HAZARDOUS MATERIAL INFORMATION SYSTEM

HEALTH	(BLUE)	0
FLAMMABILITY	(RED)	0
REACTIVITY	(YELLOW)	0
PROTECTIVE EQUIPMENT		B

EYES	RESPIRATORY	HANDS	BODY
	See Section 8		See Section 8

For applications involving prolonged use of large volumes.

See Section 16 for Definition of Ratings

HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in **Lay Terms**. In the event of overexposure, the following symptoms may be observed:

ACUTE: This product is a physical irritant to contaminated eyes. Ingestion of very large quantities of this product may be fatal, due to the potential expansion of the polymers.

CHRONIC: No chronic health effects are currently associated with overexposure to this product.

TARGET ORGANS: Eyes (physical irritant only).

PART II *What should I do if a hazardous situation occurs?*

4. FIRST-AID MEASURES

SKIN EXPOSURE: If this product contaminates the skin, rinse area thoroughly with water. In case of frostbite, place the frostbitten part in warm water. DO NOT USE HOT WATER. If warm water is not available, or is impractical to use, wrap the affected parts gently in blankets. Alternatively, if the fingers or hands are frostbitten, place the affected area of the body in the armpit. Encourage victim to gently exercise the affected part while being warmed. Seek immediate medical attention.

EYE EXPOSURE: If this product enters the eyes, flush the contaminated eyes with copious amounts of running water. Have the contaminated individual "roll" eyes.

INHALATION: If dusts of the dehydrated product are inhaled, remove the contaminated individual to fresh air.

INGESTION: If this product is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. If professional advice is not available, induce vomiting immediately. The contaminated individual should NOT drink water or other diluents. Never induce vomiting to someone who is unconscious, having convulsions, or unable to swallow.

Contaminated individuals must be taken for medical attention if any adverse effect occurs. Take a copy of label and MSDS to health professional with victim.

5. FIRE-FIGHTING MEASURES

FLASH POINT: Not applicable.

AUTOIGNITION TEMPERATURE: Not applicable.

FLAMMABLE LIMITS (in air by volume, %):

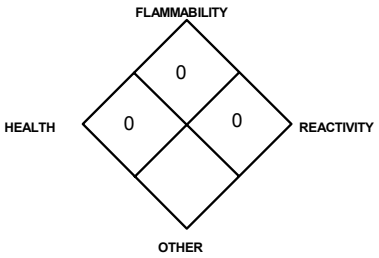
Lower (LEL): Not applicable.
Upper (UEL): Not applicable.

FIRE EXTINGUISHING MATERIALS: Non-flammable.

Water Spray: YES Carbon Dioxide: YES Dry Chemical: YES
Halon: YES Foam: YES Other: Any "ABC" Class.

UNUSUAL FIRE AND EXPLOSION HAZARDS: If exposed to extremely high temperatures under fire conditions, the water will evaporate and the polymer constituents will decompose, producing carbon monoxide and carbon dioxide.

NFPA RATING



See Section 16 for Definition of Ratings

Explosion Sensitivity to Mechanical Impact: Not sensitive.
Explosion Sensitivity to Static Discharge: Not sensitive.

SPECIAL FIRE-FIGHTING PROCEDURES: Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Move fire-exposed cylinders if it can be done without risk to firefighters. Otherwise, cool containers with hose stream and protect personnel. Withdraw immediately in case of rising sounds from venting safety device or any discoloration of tanks due to the fire.

6. ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK RESPONSE: Large, uncontrolled releases of this product should be cleaned up with personnel trained on the hazards associated with this product. These personnel should wear rubber gloves and safety goggles. Sweep-up, mop-up, or use a suitable absorbent to pick-up the polymer. If the frozen product is released, pick-up material using thermally-protective gloves (e.g., Kevlar). If necessary, rinse area thoroughly with water to remove residue. Personnel should be careful about slippery floors.

PART III *How can I prevent hazardous situations from occurring?*

7. HANDLING and STORAGE

WORK PRACTICES AND HYGIENE PRACTICES: As with all chemicals, avoid getting this product ON YOU or IN YOU. Avoid breathing dusts generated by the dehydrated product. Use in a well-ventilated location. Remove contaminated clothing immediately and launder.

STORAGE AND HANDLING PRACTICES: All employees who handle this material should be trained to handle it safely. Inspect all incoming containers before storage to ensure containers are properly labeled and not damaged. Store containers in away from sources of intense heat. Store away from incompatible materials (see Section 10, Stability and Reactivity).

PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT: Not applicable under normal circumstances of use or handling.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: No special ventilation or engineering controls are needed under normal circumstances of use or handling.

RESPIRATORY PROTECTION: No special ventilation or engineering controls are needed under normal circumstances of use or handling. Wear NIOSH/MSHA-approved dust mask if large volumes of this product become dehydrated and significant airborne dust is present in the workplace as a result. If respiratory protection is required, follow the requirements of the U.S. Federal OSHA Respiratory Protection Standard (29 CFR 1910.134) or equivalent U.S. State standards, or the appropriate standards of Canada and its Provinces.

EYE PROTECTION: Splash goggles or safety glasses.

HAND PROTECTION: Wear rubber gloves when using unfrozen polymer. Wear thermally-protective gloves (e.g., Kevlar) when using frozen product.

BODY PROTECTION: Use body protection appropriate for task.

9. PHYSICAL and CHEMICAL PROPERTIES

VAPOR DENSITY @ 21.1°C (70°F): Not applicable.
SPECIFIC GRAVITY: 0.4-0.7
SOLUBILITY IN WATER (v/v): Will absorb water.
VAPOR PRESSURE, mm Hg @ 20°C (68°F): < 10
EXPANSION RATIO: Not applicable.
ODOR THRESHOLD: Not applicable.
COEFFICIENT WATER/OIL DISTRIBUTION: Not applicable.

EVAPORATION RATE (nBuAc = 1): Not applicable.
FREEZING POINT: <0°C (<32°F)
BOILING POINT (1 atm): Not applicable.
pH: Not applicable.
SPECIFIC VOLUME (ft^3/lb): Not applicable.
VAPOR PRESSURE: Not applicable.

APPEARANCE AND COLOR: Clear, colorless gel.

HOW TO DETECT THIS SUBSTANCE (warning properties): The appearance is a distinguishing characteristic of this product.

10. STABILITY and REACTIVITY

STABILITY: Normally stable.

DECOMPOSITION PRODUCTS: Carbon monoxide and carbon dioxide.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Strong oxidizers and water-reactive materials.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Contact with incompatible materials.

PART III *How can I prevent hazardous situations from occurring?*

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA: The toxicology data currently available currently available for the monomers of the polymers in this product are as follows:

MONOMER OF POLYMER 1: Chronic inhalation exposure of rats for to this monomer's particulates (less than 10 microns in size) for 2 years produced non-specific inflammation and chronic lung injury at 0.2 and 0.8 mg/m^3. There were no adverse effects of any kind at 0.05 mg/m^3

MONOMER OF POLYMER 2 (POLYVINYL ALCOHOL):
Subcutaneous-Rat TDLo: 2500 mg/kg: Carcinogenic effects
Implant-Rat TDLo: 10 g/kg: Equivocal tumorigenic
Implant-Rat TD: 3768 mg/kg: Equivocal tumorigenic agent

SUSPECTED CANCER AGENT: The components of this product are not found on the following lists: FEDERAL OSHA Z LIST, NTP, CAL/OSHA, IARC, and there fore is neither considered to be nor suspected to be a cancer-causing agent by these agencies.

IRRITANCY OF PRODUCT: This product may be mechanically irritating to contaminated eyes.

SENSITIZATION OF PRODUCT: No component of this product is a sensitizer after prolonged or repeated exposure.

REPRODUCTIVE TOXICITY INFORMATION: Listed below is information concerning the effects of Air and its components on the human reproductive system.

Mutagenicity: Air is not expected to cause mutagenic effects in humans.
Embryotoxicity: Air is not expected to cause embryotoxic effects in humans.
Teratogenicity: Air is not expected to cause teratogenic effects in humans.
Reproductive Toxicity: Air is not expected to cause adverse reproductive effects in humans.

A mutagen is a chemical which causes permanent changes to genetic material (DNA) such that the changes will propagate through generational lines. An embryotoxin is a chemical which causes damage to a developing embryo (i.e., within the first eight weeks of pregnancy in humans), but the damage does not propagate across generational lines. A teratogen is a chemical which causes damage to a developing fetus, but the damage does not propagate across generational lines. A reproductive toxin is any substance which interferes in any way with the reproductive process.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Overexposure to this product is unlikely to aggravate existing medical conditions.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and reduce overexposure.

ACGIH BIOLOGICAL EXPOSURE INDICES (BEIs): Currently, ACGIH Biological Exposure Indices (BEIs) are not applicable for the components of this product.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL STABILITY: This product is normally stable.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: No adverse effect is anticipated to occur to plant life. Animals ingesting this material may experience adverse effects on the digestive system. See Section 11, Toxicological Information, for additional information on effects on animals.

EFFECT OF CHEMICAL ON AQUATIC LIFE: Not harmful to aquatic life under normal conditions of exposure.

13. DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Waste disposal must be in accordance with appropriate U.S. Federal, State, and local regulations, or the appropriate Standards of Canada and its Provinces.

14. TRANSPORTATION INFORMATION

THIS MATERIAL IS NOT HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME: Not Applicable
HAZARD CLASS NUMBER and DESCRIPTION: Not Applicable
UN IDENTIFICATION NUMBER: Not Applicable
PACKING GROUP: Not Applicable
DOT LABEL(S) REQUIRED: Not Applicable
NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (1996): Not Applicable

MARINE POLLUTANT: No component of this product is classified by the DOT as a Marine Pollutant (as defined by 49 CFR 172.101, Appendix B).

TRANSPORT CANADA, TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: THIS PRODUCT IS NOT CONSIDERED AS DANGEROUS GOODS.

15. REGULATORY INFORMATION

ADDITIONAL U.S. REGULATIONS:

U.S. SARA REPORTING REQUIREMENTS: The components of this product are not subject to the reporting requirements of Sections 302, 304, and 313 of Title III of the Superfund Amendments and Reauthorization Act, and are listed as follows:

U.S. SARA THRESHOLD PLANNING QUANTITY: Not applicable.

U.S. CERCLA REPORTABLE QUANTITY (RQ) : Not applicable.

U.S. TSCA INVENTORY STATUS: The components of this product are listed on the TSCA Inventory, or are exempted as a polymer.

OTHER U.S. FEDERAL REGULATIONS: Not applicable.

U.S. STATE REGULATORY INFORMATION: Components of this product are covered under specific State regulations, as denoted below:

Alaska - Designated Toxic and Hazardous Substances: None.
California - Permissible Exposure Limits for Chemical Contaminants: None.
Florida - Substance List: None.
Illinois - Toxic Substance List: None.
Kansas - Section 302/313 List: None.
Massachusetts - Substance List: None.
Michigan - Critical Materials Register: None.
Minnesota - List of Hazardous Substances: None.
Missouri - Employer Information/Toxic Substance List: None.
New Jersey - Right to Know Hazardous Substance List: None.
North Dakota - List of Hazardous Chemicals, Reportable Quantities: None.
Pennsylvania - Hazardous Substance List: None.
Rhode Island - Hazardous Substance List: None.
Texas - Hazardous Substance List: None.
West Virginia - Hazardous Substance List: None.
Wisconsin - Toxic and Hazardous Substances: None.

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): No component of this product is on the California Proposition 65 lists.

15. REGULATORY INFORMATION (Continued)

ANSI LABELING (Z129.1; Provided to Summarize Occupational Hazards): **CAUTION!** MAY BE HARMFUL OR FATAL IF INGESTED IN LARGE QUANTITIES. DUSTS OF DEHYDRATED PRODUCT CAN BE IRRITATING TO THE RESPIRATORY SYSTEM. CONTACT WITH FROZEN PRODUCT MAY CAUSE FROSTBITE. Do not taste or swallow. Wash thoroughly after handling. Avoid breathing dusts. Wear gloves and goggles. Wear thermally-protective cloves (e.g., Kevlar) if handling frozen product. **FIRST-AID:** In case of contact with skin or eyes, flush skin with plenty of water. If inhaled, remove to fresh air. If swallowed, induce vomiting and get medical assistance. Get medical attention if adverse effects develop. **IN CASE OF FIRE:** Use water fog, dry chemical, CO_2, or "alcohol" foam. **IN CASE OF SPILL:** Sweep-up or absorb spill with inert material (sand, polypads, or other absorbent). For large spills, dike area. Consult Material Safety Data Sheet for additional information.

ADDITIONAL CANADIAN REGULATIONS:

CANADIAN DSL/NDSL INVENTORY STATUS: The components of this product are on the DSL/NDSL Inventories, or exempted as a polymer.

OTHER CANADIAN REGULATIONS: Not applicable.

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBSTANCES LISTS: The components of this product are not on the CEPA Priorities Substances Lists.

CANADIAN WHMIS SYMBOLS: Not applicable.

16. OTHER INFORMATION

PREPARED BY:

CHEMICAL SAFETY ASSOCIATES, Inc.
9163 Chesapeake Drive, San Diego, CA 92123-1002
619/565-0302

DEFINITIONS OF TERMS

A large number of abbreviations and acronyms appear on a MSDS. Some of these which are commonly used include the following:

CAS #: This is the Chemical Abstract Service Number which uniquely identifies each constituent. It is used for computer-related searching.

EXPOSURE LIMITS IN AIR:

ACGIH - American Conference of Governmental Industrial Hygienists, a professional association which establishes exposure limits. **TLV -** Threshold Limit Value - an airborne concentration of a substance which represents conditions under which it is generally believed that nearly all workers may be repeatedly exposed without adverse effect. The duration must be considered, including the 8-hour Time Weighted Average **(TWA)**, the 15-minute Short Term Exposure Limit, and the instantaneous Ceiling Level **(C)**. Skin absorption effects must also be considered.

OSHA - U.S. Occupational Safety and Health Administration.

PEL - Permissible Exposure Limit - This exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. The OSHA Permissible Exposure Limits are based in the 1989 PELs and the June, 1993 Air Contaminants Rule (Federal Register: 58: 35338-35351 and 58: 40191). Both the current PELs and the vacated PELs are indicated. The phrase, "Vacated 1989 PEL," is placed next to the PEL which was vacated by Court Order.

IDLH - Immediately Dangerous to Life and Health **-** This level represents a concentration from which one can escape within 30-minutes without suffering escape-preventing or permanent injury. **The DFG - MAK** is the Republic of Germany's Maximum Exposure Level, similar to the U.S. PEL. **NIOSH** is the National Institute of Occupational Safety and Health, which is the research arm of the U.S. **O**ccupational **S**afety and **H**ealth **A**dministration (**OSHA**). NIOSH issues exposure guidelines called **R**ecommended **E**xposure **L**evels (**REL**s). When no exposure guidelines are established, an entry of **NE** is made for reference.

HAZARD RATINGS:

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM: Health Hazard: **0** (minimal acute or chronic exposure hazard); **1** (slight acute or chronic exposure hazard); **2** (moderate acute or significant chronic exposure hazard); **3** (severe acute exposure hazard; onetime overexposure can result in permanent injury and may be fatal); **4** (extreme acute exposure hazard; onetime overexposure can be fatal). Flammability Hazard: **0** (minimal hazard); **1** (materials that require substantial pre-heating before burning); **2** (combustible liquid or solids; liquids with a flash point of 38-93°C [100-200°F]); **3** (Class IB and IC flammable liquids with flash points below 38°C [100°F]); **4** (Class IA flammable liquids with flash points below 23°C [73°F] and boiling points below 38°C [100°F]. Reactivity Hazard: **0** (normally stable); 1 (material that can become unstable at elevated temperatures or which can react slightly with water); **2** (materials that are unstable but do not detonate or which can react violently with water); **3** (materials that can detonate when initiated or which can react explosively with water); **4** (materials that can detonate at normal temperatures or pressures).

PERSONAL PROTECTIVE EQUIPMENT CODES: B: Gloves and goggles; **C:** Gloves, goggles, rubber apron (appropriate body protection); **D:** Gloves, goggles, faceshield; rubber apron (appropriate body protection);. **X:** Special attention should be given to PPE Selection.

NATIONAL FIRE PROTECTION ASSOCIATION: Health Hazard: **0** (material that on exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials); **1** (materials that on exposure under fire conditions could cause irritation or minor residual injury); **2** (materials that on intense or continued exposure under fire conditions could cause temporary incapacitation or possible residual injury); **3** (materials that can on short exposure could cause serious temporary or residual injury); **4** (materials that under very short exposure could cause death or major residual injury). Flammability Hazard and Reactivity Hazard: Refer to definitions for "Hazardous Materials Identification System".

FLAMMABILITY LIMITS IN AIR:

Much of the information related to fire and explosion is derived from the National Fire Protection Association (**NFPA**). Flash Point - Minimum temperature at which a liquid gives off sufficient vapors to form an ignitable mixture with air. Autoignition Temperature: The minimum temperature required to initiate combustion in air with no other source of ignition. LEL - the lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source. UEL - the highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source.

TOXICOLOGICAL INFORMATION:

Possible health hazards as derived from human data, animal studies, or from the results of studies with similar compounds are presented. Definitions of some terms used in this section are: **LD_{50}** - Lethal Dose (solids & liquids) which kills 50% of the exposed animals; **LC_{50}** - Lethal Concentration (gases) which kills 50% of the exposed animals; **ppm** concentration expressed in parts of material per million parts of air or water; **mg/m^3** concentration expressed in weight of substance per volume of air; **mg/kg** quantity of material, by weight, administered to a test subject, based on their body weight in kg. Data from several sources are used to evaluate the cancer-causing potential of the material. The sources are: **IARC** - the International Agency for Research on Cancer; **NTP** - the National Toxicology Program, **RTECS** - the Registry of Toxic Effects of Chemical Substances, **OSHA** and **CAL/OSHA**. IARC and NTP rate chemicals on a scale of decreasing potential to cause human cancer with rankings from 1 to 4. Subrankings (2A, 2B, etc.) are also used. Other measures of toxicity include **TDLo**, the lowest dose to cause a symptom and **TCLo** the lowest concentration to cause a symptom; **TDo**, **LDLo**, and **LDo**, or **TC**, **TCo**, **LCLo**, and **LCo**, the lowest dose (or concentration) to cause lethal or toxic effects. **BEI** - Biological Exposure Indices, represent the levels of determinants which are most likely to be observed in specimens collected from a healthy worker who has been exposed to chemicals to the same extent as a worker with inhalation exposure to the TLV. Ecological Information: EC is the effect concentration in water.

REGULATORY INFORMATION:

This section explains the impact of various laws and regulations on the material. **EPA** is the U.S. Environmental Protection Agency. **WHMIS** is the Canadian Workplace Hazardous Materials Information System. **DOT** and **TC** are the U.S. Department of Transportation and the Transport Canada, respectively. Superfund Amendments and Reauthorization Act **(SARA)**; the Canadian Domestic/Non-Domestic Substances List **(DSL/NDSL)**; the U.S. Toxic Substance Control Act **(TSCA)**; Marine Pollutant status according to the **DOT**; the Comprehensive Environmental Response, Compensation, and Liability Act **(CERCLA or Superfund)**; and various state regulations.