

Parallam Plus PSL (CCA)

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1. Product Identification

Product	Manufacturing Location(s)
Parallam® Plus PSL (CCA)	USA: Buckhannon, WV
	Canada: Vancouver, BC

Synonyms: CCA Treated Parallel Strand Lumber, CCA Treated Wood, CCA Treated Structural Composite Lumber, Wolmanized Parallam PSL (CCA).

2. Hazardous Ingredients/Identity Information

Name	CAS#	Percent	Agency	Exposure Limits	Comments
Wood (wood dust, softwood and	None	90-92	OSHA	PEL-TWA 15 mg/m ³ (see footnote ^A below)	Total dust
hardwood)			OSHA	PEL-TWA 5 mg/m ³ (see footnote ^A below)	Respirable dust fraction
			ACGIH	TLV-TWA 1 mg/m ³	Inhalable, All other species
Phenol-	9003-	7-8	OSHA	PEL-TWA 0.75 ppm	Free gaseous formaldehyde
formaldehyde	35-4	ľ	OSHA	PEL-STEL 2 ppm	Free gaseous formaldehyde
resin/wax solids ^B			ACGIH	TLV-Ceiling 0.3 ppm	Free gaseous formaldehyde
Chromium (III)	7440-	<1 ^C	OSHA	PEL-TWA 0.5 mg/m ³	As chromium
	47-3		ACGIH	TLV-TWA 0.5 mg/m ³	As chromium
			ACGIH	TLV-TWA 0.01 mg/m ³	As chromium-insoluble
Arsenic (V)	7440-	<1 ^C	OSHA	PEL-TWA 0.01 mg/m ³	As arsenic
	38-2		ACGIH	TLV-TWA 0.01 mg/m ³	As arsenic
Copper	oer 7440- <1 ^{.C}	<1 ^C	OSHA	PEL-TWA 1 mg/m ³	Dusts and mists
	50-8	1	ACGIH	TLV-TWA 1 mg/m ³	Dusts and mists

^A In AFL-CIO v OSHA, 965 F. 2d 962 (11th Cir. 1992), the Court overturned OSHA's 1989 Air Contaminants Rule, including the specific PEL's for wood dust that OSHA had established at that time. The 1989 vacated PEL's were: 5 mg/m³ PEL-TWA and 10 mg/m³ STEL (15 min), all softwood and hardwood except Western Red Cedar. Wood dust is now regulated by OSHA as "Particulates Not Otherwise Regulated" (PNOR), which is also referred to as "nuisance dust". However, some states have incorporated the 1989 OSHA PEL's in their state plans. Additionally, OSHA indicated that it may cite employers under the OSH Act general duty clause in appropriate circumstances for noncompliance with the 1989 PEL's.

2. Hazard Ingredients/Identity Information (cont'd.)

^B These products may contain free formaldehyde (<0.1%, wt %), which may be released depending on concentration and environmental conditions. These products contain no added urea-formaldehyde resins. Large scale chamber studies conducted by the APA Engineered Wood Association on products using similar manufacturing processes and formaldehyde adhesives as Parallam® Plus PSL (CCA) have shown that the finished products should off-gas levels below 0.1 ppm as well.

Based on wood retention of 0.6 pounds CCA per cubic foot of wood. Actual retention percentage may vary slightly due to differences in wood stock and treatment retention levels.

Although Chrome VI is the original valence in the chromic acid used to treat this wood: it is reduced to Chrome III during the treating and fixation process. Some Chrome VI may remain in trace amounts (<0.1%, wt %). Under usual handling conditions Cr VI and Cr III levels are anticipated to be below the established action levels and or exposure limits. If unusual circumstances exist, personal air monitoring may be required to assure compliance with OSHA's Hexavalent Chromium Standard.

3. Hazard Identification

Primary Safety/Health Hazards:

- Warning: Parallam® Plus PSL (CCA) may pose a combustible dust explosion hazard if dried and suspended in air in sufficient concentrations and in proximity to an ignition source. Users of this product should examine the potential to generate wood and resin dusts during handling and processing and related combustibility hazards and controls. See additional comments in MSDS.
- The primary health hazard posed by this product is thought to be due to exposure to airborne wood dust and treating chemicals (CCA).
- Appearance and Odor: Parallam® Plus PSL (CCA) is green in color consisting of southern yellow pine softwood with a woody odor.

Primary Route(s) of Exposure:

- □ Ingestion:
- Skin: Dust
- ☑ Inhalation: Dust
- Eve: Dust
- Medical Conditions Generally Aggravated by Exposure: CCA treated softwood dust may aggravate pre-existing respiratory or skin conditions or allergies.

Signs and Symptoms of Exposure:

- Acute Health Hazards: CCA treated southern pine wood dust may cause eye irritation. Certain species of wood dust can elicit allergic contact dermatitis in sensitized individuals. Wood dust may cause respiratory irritation, nasal dryness, coughing, sneezing and wheezing as a result of inhalation. Formaldehyde may cause temporary irritation of skin, eyes, or respiratory system. Formaldehyde may cause sensitization in susceptible individuals.
- Chronic Health Hazards: CCA treated southern pine wood dust may cause allergic contact dermatitis and respiratory sensitization with prolonged, repetitive contact or exposure to elevated dust levels. Prolonged exposure to wood dust has been reported by some observers to be associated with nasal cancer. Additional information related to carcinogenicity for wood dust and formaldehyde is listed below.

Carcinogenicity Listing:

🗵 NTP:

Wood dust, Arsenic (as Arsenic Compounds, inorganic) and Chromium VI compounds - Classified as Known Human Carcinogens. Formaldehyde is reasonably anticipated to cause cancer in humans. Wood dust, Arsenic (and arsenic compounds), Formaldehyde and ☑ IARC Monographs: Chromium (VI) - Group I compounds-Carcinogenic to humans. SCHA Regulated: Arsenic, Chromium VI and Formaldehyde gas

3. Hazard Identification (cont'd.)

NTP:

- Wood Dust: According to its Report on Carcinogens, Eleventh Edition, NTP states, "Wood dust is known to be a human carcinogen based on sufficient evidence of carcinogenicity from studies in humans". An association between wood dust exposure and cancer of the nasal cavity has been observed in many case reports, cohort studies, and case-control studies that specifically addressed nasal cancer. Strong and consistent associations with cancer of the nasal cavities and paranasal sinuses were observed both in studies of people whose occupations are associated with wood dust exposure and in studies that directly estimated wood dust exposure. This classification is based primarily on increased risk in the occurrence of adenocarcinomas of the nasal cavities and paranasal sinuses associated with exposure to wood dust. The evaluation did not find sufficient evidence to associate cancers of the oropharynx, hypopharynx, lung, lymphatic and hematopoietic systems, stomach, colon or rectum with exposure to wood dust. There is inadequate evidence for the carcinogenicity of wood dust from studies in experimental animals according to NTP.
- Arsenic (as Arsenic Compounds, inorganic): According to its *Eleventh Report on Carcinogens*, NTP states, "Inorganic arsenic compounds are *known to be human carcinogens* based on sufficient evidence of carcinogenicity in humans (IARC 1987). Many cases of skin cancer have been reported among people exposed to arsenic through medical treatment with inorganic trivalent arsenic compounds. In some instances, skin cancers have occurred in combination with other cancers, such as liver angiosarcoma, intestinal and urinary bladder cancers, and meningioma. Epidemiological studies of cancer after medical treatment with arsenic compounds have shown an excess of skin cancers, but no clear association with other cancers has been obtained."

IARC:

- Wood Dust- Group 1: Carcinogenic to humans; sufficient evidence of carcinogenicity. This classification is primarily based on studies showing an association between occupational exposure to wood dust and adenocarcinoma to the nasal cavities and paranasal sinuses. IARC did not find sufficient evidence of an association between occupational exposure to wood dust and cancers of the oropharynx, hypopharynx, lung, lymphatic and hematopoietic systems, stomach, colon or rectum.
- Formaldehyde- Group 1: Carcinogenic to humans, sufficient evidence of carcinogenicity. A working group of IARC has determined that there is sufficient evidence that formaldehyde causes nasopharyngeal cancer in humans, a rare cancer in developed countries and "strong but not sufficient evidence" for leukemia. However, numerous epidemiological studies have failed to demonstrate a relationship between formaldehyde exposure and nasal cancer or pulmonary diseases such as emphysema or lung cancer.
- Arsenic (and arsenic compounds) Group 1: (Carcinogenic to humans; sufficient evidence of carcinogenicity). This evaluation applies to arsenic and arsenic compounds as a whole and not necessarily to all individual chemicals within the group. *Arsenic pentoxide, the arsenic compound used in the product, has not been associated with carcinogenicity.*

Chromium (VI) - Group 1: Carcinogen (Carcinogenic to humans; sufficient evidence of carcinogenicity).

4. Emergency and First-Aid Procedures

- **Ingestion:** Not applicable under normal use. Wash hands thoroughly before eating, drinking, using tobacco products, and /or using restrooms after handling materials.
- **Eye Contact:** Treated wood dust may cause mechanical irritation. Treat dust in eye as foreign object. Flush with water to remove dust particles. Seek medical help if irritation persists.
- **Skin Contact:** Treated wood dust containing chromium can elicit allergic contact dermatitis in sensitized individuals, as well as mechanical irritation resulting in erythema and hives. Wash exposed areas with mild soap and seek medical help if rash, irritation or dermatitis persists. Clothing should be laundered regularly.
- Skin Absorption: Not known to occur under normal use.

4. Emergency and First Aid Procedures (cont'd.)

Inhalation: Treated wood dust may cause unpleasant obstruction in the nasal passages, resulting in dryness of nose, dry cough, sneezing and headaches. Remove to fresh air. Seek medical help if persistent irritation, severe coughing or breathing difficulty occurs.
 Note to Physician: None

5. Fire and Explosion Data				
Flash Point (Method Used): N/	AP			
Flammable Limits:	LFL =	See below under Fire and Explosic	"Unusual UF I on Hazards"	L= NAP
Extinguishing Media: Water, ca Autoignition Temperature: Va Special Firefighting Procedure	arbon dioxide, sand riable [typically 400°- • s: None	500°F (204°-260°(C)]	
Unusual Fire and Explosion Ha diameter, untreated wood du concentration of 40 grams (4 wood dusts. Reference NFP	azards: Depending of ist may explode in the 0,000 mg) of dust pe A Standards- 654 an	on moisture conter e presence of an ig r cubic meter of a d 664 for guidance	nt, and more importar gnition source. An air ir is often used as the e.	ntly, particle rborne LEL for
HMIS Rating (Scale 0-4):	Health = 2^* Health = 2	Fire = 1 Fire = 1	Physical Hazard = Reactivity =	0 0

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Steps to be Taken In Case Material Is Released or Spilled: Sweep or vacuum up for recovery and disposal. Avoid creating dusty conditions whenever feasible. Maintain good housekeeping to avoid accumulation of dried wood and resin dust on exposed surfaces. Dried wood and resin dust may pose a combustible dust hazard. Place recovered wood dust in a container for proper disposal.

7. Handling and Storage

Precautions to be Taken In Handling and Storage: Dried treated wood dust may pose a combustible dust hazard. Avoid repeated or prolonged breathing of treated wood dust. Wash hands thoroughly before eating, drinking, using tobacco products, and or/using restrooms. Avoid eye contact and repeated or prolonged contact with skin. Change protective clothing and gloves when signs of contamination appear. Keep in cool, dry place away from heat, flames, sparks and other sources of ignition. These products may release some formaldehyde in gaseous form. Specific handling and storage conditions should be assessed to determine potential formaldehyde concentrations. Store in well-ventilated, cool, dry place away from open flame.

8. Exposure Control Measures, Personal Protection

Personal Protective Equipment:

RESPIRATORY PROTECTION – Use NIOSH approved filtering face piece respirator ("dust mask") or higher levels of respiratory protection as indicated if there is a potential to exceed the exposure limits or for symptom relief or worker comfort. Use respiratory protection in accordance with regulatory requirements such as the OSHA respiratory protection standard 29 CFR 1910.134.

EYE PROTECTION – Approved goggles or tight fitting safety glasses are recommended when excessive exposures to dust may occur (e.g. during clean up) and when eye irritation may occur.

PROTECTIVE GLOVES – Leather gloves are recommended to minimize potential mechanical irritation from handling dry product. Rubber gloves are recommended when handling wet product.

8. Exposure Control Measures, Personal Protection (cont'd.)

OTHER PROTECTIVE CLOTHING OR EQUIPMENT – Outer garments may be desirable in extremely dusty areas. If preservatives and/or wood dust accumulate on clothes, launder before reuse. Wash work clothes separately from other household clothing.

WORK/HYGIENE PRACTICES – Follow good hygienic and housekeeping practices. Clean up areas where wood dust settles to avoid excessive accumulation of this combustible material. Minimize compressed air blowdown or other practices that generate high airborne-dust concentrations. Wash hands thoroughly with soap and water before eating, drinking, toileting or using tobacco products and avoid direct hand to mouth contact with soiled hands.

Ventilation:

- LOCAL EXHAUST Provide local exhaust as needed so that exposure limits are met. Ventilation to control dust should be considered where potential explosive concentrations and ignition sources are present. The design and operation of any exhaust system should consider the possibility of explosive concentrations of wood dust within the system. See "SPECIAL" section below. Use of tool mounted exhaust systems should also be considered, especially when working in enclosed areas.
- MECHANICAL (GENERAL) Provide general ventilation in processing and storage areas so that exposure limits are met.
- SPECIAL Ensure that exhaust ventilation and material transport systems involved in handling this product contain explosion relief vents or suppression systems designed and operated in accordance with applicable standards if the operating conditions justify their use.
- OTHER Cutting & Machining of product should preferably be done outdoors or with adequate ventilation & containment.

9. Physical/Chemical Properties

Physical Description: Parallam® Plus PSL (CCA) is green in color consisting of southern yellow pine softwood with a woody odor.

Boiling Point (@ 760 mm Hg):	NAP
Evaporation Rate (Butyl Acetate = 1):	NAP
Freezing Point:	NAP
Melting Point:	NAP
Molecular Formula:	NAP
Molecular Weight:	NAP
Oil-water Distribution Coefficient:	NAP
Odor Threshold:	NAV
pH:	NAP
Solubility in Water (% by weight):	Insoluble
Specific Gravity (H ₂ O = 1):	Variable; depends on moisture content
Vapor Density (air = 1; 1 atm):	NAP
Vapor Pressure (mm Hg):	NAP
Viscosity:	NAP
% Volatile by Volume [@ 70°F (21°C)]:	NAP

10. Stability and Reactivity

10. Stability and Reactivity (cont'd.)

Hazardous Decomposition or By-Products: Thermal decomposition (i.e. smoldering, burning) products include carbon monoxide, carbon dioxide, aliphatic aldehydes including formaldehyde, resin acids, terpenes, polycyclic aromatic hydrocarbons, oxides of nitrogen, chromium, copper, and arsenic. The metals may remain in the ash if the wood is burned. Natural decomposition of organic materials such as wood may produce toxic gases and an oxygen deficient atmosphere in enclosed or poorly ventilated areas. Spontaneous and rapid hazardous decomposition will not occur.

 Hazardous Polymerization:
 Image: May occur
 Image: Will not occur

 Sensitivity to Mechanical Impact:
 NAP
 Image: Wall not occur

 Sensitivity to Static Discharge:
 NAP
 Image: Wall not occur

11. Toxicological Information

Toxicity Data: No information is available for the specific product in purchased form **Components:** Individual component information is listed below if available. <u>Wood dust (softwood or hardwood)</u>

Treated wood dust generated from sawing, sanding or machining the product – may cause nasal dryness, irritation, coughing and sinusitis. NTP and IARC classify wood dust as a human carcinogen (IARC Group 1). See Section 3 above.

Formaldehyde

Human inhalation TC_{Lo} of 17 mg/m³ for 30 minutes produced eye and pulmonary results; human inhalation TC_{Lo} of 300 ug/m³ produced nose and central nervous system results; LC_{50} (rat, inhalation) = 1,000 mg/m³, 30 minutes; LC_{50} (mice, inhalation) = 400 mg/m³, 2 hours. IARC classifies formaldehyde as a human carcinogen (IARC Group 1). NTP classifies formaldehyde as Reasonably Anticipated to be a Human Carcinogen. See Section 3 above.

<u>CCA</u>

Chromated copper arsenate (CCA) Sawdust from CCA treated wood has been shown not to cause changes in mice fed sawdust or birth defects in mice or rabbits receiving sawdust in their feed or applied to their skin. Recreational exposure to children using CCA treated wood playground equipment has been evaluated. The results of this study indicate that the amount of arsenic transferred from the wood surface to the child is within the normal variation of total arsenic exposure to children and that the maximum risks of skin cancer associated with exposure approximates the skin cancer risk from sunlight exposure experienced during normal play periods. See Section 3 above.

Target Organs: Respiratory system, skin, eyes.

12. Ecological Information

Environmental Fate:

CCA solution, new or old CCA-treated wood, mulch containing CCA wood, and ash from combustion of CCA wood is expected to leach components into soil or water, if in direct contact. Chromium (VI), arsenic, and copper can leach from soil into groundwater and surface water. Expected leaching potential order would be chromium (VI) > arsenic > copper. CCA is expected to persist in soil and remain leachable for years. Chromium (VI) is not expected to accumulate in fish and shellfish. Copper may accumulate in tissues of mussels and oysters. Arsenic may accumulate, primarily in a relatively nontoxic form, in tissues of fish and shellfish.

12. Ecological Information (cont'd.)

Environmental Toxicity:

- Study Abstracts: A technical paper published in the Forest Products Journal (September, 1974) by Levi, Huisingh and Nesbitt described a study conducted to determine if CCA wood preservative in grapevine support posts might be absorbed by the vines, leaves and/or grapes. This study concluded that "CCA" preservatives are bound in wood, are not readily leached and are not concentrated in plants growing close to the treated wood." The Springborn Laboratories Environmental Sciences Division in 1993 conducted a sediment exposure study using leachate from CCA treated and untreated marine pilings and exposing Ampelisca Abdita for a period of 10 days. Survival of the organisms during the 10-day exposure period was the biological endpoint used to establish the effects of exposure. Results indicated that leachate from treated pilings had no adverse effect on organism survival. It was concluded that the primary constituents of the CCA-treated wood piling were not present in the leachate at concentrations which would adversely affect the survival of the organisms.
- The Food and Drug Administration's (FDA) "Market Basket Survey" has consistently shown that arsenic in tomatoes is below the analytical level of detection despite the increased usage of arsenical-treated wood for tomato stakes. Moreover, even though CCA-treated wood has been increasingly used in applications such as cattle bunks and stalls and poultry brooders for the last ten years, the FDA survey has shown a decrease in the arsenic content of dairy, meat and poultry products.
- A study funded in part by the National Oceanic and Atmospheric Administration (NOAA) and prepared by the Marine Resources Division of the South Carolina Department of Natural Resources in 1995 measured the impact of wood preservative leachate from docks in an estuarine environment. Copper, chromium, arsenic and polynuclear aromatic hydrocarbons (PAHs) were measured in composite samples of sediments and naturally occurring oyster populations from creeks with high densities of docks, and from nearby reference creeks with no docks. Sediments from all but one site had metal and total PAH concentrations which were below levels reported to cause biological effects, and the oysters showed no significant difference in their physiological condition. Bioassays were also conducted on four common estuarine species and hatchery reared oysters. The results suggest that wood preservative leachates from dock pilings have no acutely toxic effects on these common species, nor do they affect the survival or growth of juvenile oysters over a six-week period. In some cases, metal leachates may accumulate in sediments and oysters immediately adjacent to pilings, but do not appear to become concentrated in sediments or oysters elsewhere in the same creeks.

13. Disposal Considerations

Waste Disposal Method: CAUTION: Do not burn treated wood in open fires, stoves, fireplaces, or residential boilers because toxic chemicals may be produced in the smoke and ash. Treated wood from commercial or industrial use (for example, construction sites) may be burned only in commercial or industrial incinerators or boilers in accordance with federal, state, and local regulations. Do not use treated wood as a compost or mulch. CCA treated wood is not listed under any sections of the Canadian National Pollution Release Inventory (NPRI). This product is exempted as a hazardous waste under any sections of the RCRA regulations as long as the product is being utilized for its intended end use. State run hazardous waste programs may be more stringent and the classification concerning hazardous waste is subject to change in the future. Be sure to check with your federal, state, local and provincial regulatory representatives prior to disposal.

14. Transport Information

Mode: (Air, land water) Not regulated as a hazardous material by the U.S. Department of Transportation. Not listed as a hazardous material in Canadian Transportation of Dangerous Goods (TDG) regulations.

Proper Shipping Name:	NAP
Hazard Class:	NAP
UN/NA ID Number:	NAP
Packing Group:	NAP
Information Reported for Product/Size:	NAP

15. Regulatory Information

TSCA: Ingredients: arsenic, copper, chromium and phenol-formaldehyde resin are on the TSCA inventory.

- **CERCLA:** The following ingredients are on the CERCLA inventory: formaldehyde (RQ = 100 lbs.); arsenic (RQ = 1 lb.); chromium, pieces < 100 micrometers diameter (RQ = 5,000 lbs.), copper, pieces < 100 micrometers diameter (RQ = 5,000 lbs.)
- **DSL:** The following ingredients are on the Canadian Domestic Substance List (DSL) inventory: formaldehyde, arsenic, chromium and copper.
- **OSHA:** Wood products are not hazardous under the criteria of the federal OSHA Hazard Communication Standard 29 CFR 1910.1200. However, wood dust generated by sawing, sanding or machining this product may be hazardous. Workplace exposure to formaldehyde is specifically regulated under 29 CFR 1910.1048.

STATE RIGHT-TO-KNOW:

- California Prop 65 This product contains formaldehyde, which depending on temperature and humidity, may be emitted from the product. Weyerhaeuser has evaluated formaldehyde emission rates from its products and have found these rates to be below the significant risk level. The user should determine whether formaldehyde emissions resulting from its site specific use, handling, ventilation design, capacity and final construction design for this product could exceed the safe harbor level.
- <u>Warning</u>: Drilling, sawing, sanding or machining wood products generates wood dust, arsenic, (inorganic arsenic compounds), and chromium (hexavalent compounds), chemicals/substances known to the State of California to cause cancer.
- New Jersey This product contains the following ingredients listed on New Jersey's Environmental Hazardous Substance List: formaldehyde; arsenic; chromium; and copper and when cut or otherwise machined, the product may emit wood dust (softwood).
- Pennsylvania This product contains the following ingredients listed on Pennsylvania's Hazardous Substance Lists: formaldehyde; arsenic; chromium; copper; and when cut or otherwise machined, the product may emit wood dust (softwood) which appears on Pennsylvania's Appendix A, Hazardous Substance List.
- **SARA 313 Information:** This product does not contain any chemical ingredient (s) with known CAS numbers that exceed the de minimis reporting levels established by SARA Title III, section 313 and 40 CFR section 372.
- **SARA 311/312 Hazard Category:** This product as purchased has been reviewed according to the EPA "Hazard Categories" promulgated under SARA Title III Sections 311 and 312 and is considered, under applicable definitions, to meet the following categories:

15. Regulatory Information (cont'd.)

An immediate (acute) health hazard	Yes
A delayed (chronic) health hazard	Yes
A corrosive hazard	No
A fire hazard	No
A reactivity hazard	No
A sudden release hazard	No

FDA: This product is not intended to be ingested or used as a food contact material.

WHMIS Classification: Controlled Product: D2A - Wood dust, arsenic (and arsenic compounds), formaldehyde and chromium (VI): IARC Group 1.

16. Additional Information

Date Prepared: 08/03/2009

Date Revised: 10/05/2010

Prepared By: Weyerhaeuser Company, Environment, Health, Safety and Sustainability Weyerhaeuser MSDS available on: <u>http://www.weyerhaeuser.com/Sustainability/MSDS</u>

User's Responsibility: The information contained in this Material Safety Data Sheet is based on the experience of occupational health and safety professionals and comes from sources believed to be accurate or otherwise technically correct. It is the user's responsibility to determine if the product is suitable for its proposed application(s) and to follow necessary safety precautions. The user has the responsibility to make sure that this MSDS is the most up-to-date issue.

Definition of Common Terms:

Demnition	or c	common rerms:
ACGIH	=	American Conference of Governmental Industrial Hygienists
AICS	=	Australian Inventory of Chemical Substances
С	=	Ceiling Limit
CAS#	=	Chemical Abstracts System Number
DOT	=	U. S. Department of Transportation
DSL	=	Domestic Substance List
EC50	=	Effective concentration that inhibits the endpoint to 50% of control population
EINECS	=	European Inventory of Existing Commercial Chemical Substances or European List of
		Notified Chemical Substances
ENCS	=	Japanese Existing and New Chemical Substances List
EPA	=	U.S. Environmental Protection Agency
HMIS	=	Hazardous Materials Identification System
IARC	=	International Agency for Research on Cancer
IATA	=	International Air Transport Association
IMDG	=	International Maritime Dangerous Goods
KECL	=	South Korean Existing Chemicals List
LC50	=	Concentration in air resulting in death to 50% of experimental animals
LCLo	=	Lowest concentration in air resulting in death
LD50	=	Administered dose resulting in death to 50% of experimental animals
LDLo	=	Lowest dose resulting in death
LEL	=	Lower Explosive Limit
LFL	=	Lower Flammable Limit
MSHA	=	Mine Safety and Health Administration
NAP	=	Not Applicable
NAV	=	Not Available
NFPA	=	National Fire Protection Association
NIOSH	=	National Institute for Occupational Safety and Health
NPRI	=	Canadian National Pollution Release Inventory
NITO		National Taxicalagy Dragrom

NTP = National Toxicology Program

16. Additional Information (cont'd.)

- = Occupational Safety and Health Administration OSHA = Permissible Exposure Limit PEL RCRA = Resource Conservation and Recovery Act = Reportable Quantity RQ = Short-Term Exposure Limit (15 minutes) STEL = Standard Temperature and Pressure STP = Lowest concentration in air resulting in a toxic effect TCLo = Canadian Transportation of Dangerous Goods TDG = Lowest dose resulting in a toxic effect TDLo = Threshold Limit Value TLV TSCA = Toxic Substance Control Act TWA = Time-Weighted Average (8 hours) UFL = Upper Flammable Limit
- WHMIS = Workplace Hazardous Materials Information System