

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)			
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)	
POLYCYCLIC AROMATIC HYDROCRABONS (PAHs)						Exceed water quality standards in Oregon (DEQ, 2007b).		
120-12-7	Anthracene PBT score: 3	An intermediate in dye production, in the manufacture of synthetic fibers, and as a diluent for wood preservatives. Also used in smoke screens (pyrotechnics), as scintillation counter crystals, in organic semiconductor research, and to synthesize a chemotherapeutic agent (ATSDR, 1995).	Produced commercially by recovery from a coal tar distillation fraction (ATSDR, 1995). Primarily a ubiquitous product of incomplete combustion, with extensive natural and anthropogenic point and non-point sources. Has also been identified in emissions from open burning of scrap rubber tires, in high octane gasoline, in coke oven emissions, in emissions from asphalt processes, and in the mainstream smoke of cigarettes, cigar and pipe smoke, mainstream smoke of marijuana cigarettes, exhaust emissions from gasoline engines, samples of charcoal-broiled steaks, edible oils, surface water, tap water, waste water, and dried sediment of lakes.	U.S. total annual releases: ≈356,000 kg (2008 TRI). Oregon total annual releases: 0 kg (2008 TRI). Included in 2002 National Air Toxics Assessment as PAH/Particulate Organic Matter (POM). Magnitude: High	Detected in WWTP effluent discharged into the Columbia River (USGS, 2009). Detected in biosolids nationally (Harrison et al., 2006).	Detected in surface water (Willamette basin) using passive samplers (SPMD) (DEQ, 2008).	Not detected in fish sampled in U.S. lakes and reservoirs (Stahl et al., 2009). Detected in streams nationally (Kolpin, et al., 2002) Detected in industrial waste, groundwater (landfill monitoring), & sediment in Oregon (DEQ LASAR).	POLYCYCLIC AROMATIC HYDROCRABONS (PAHs)
56-55-3	Benz(a)anthracene PBT score: 3	None.	Ubiquitous pollutant formed by incomplete combustion of carbon-containing fuels.	No data available for this particular PAH. U.S. total annual releases (total PAH): ≈555,000 kg (2008 TRI). Oregon total annual releases (total PAH): ≈5,700 kg (2008 TRI). Included in 2002 National Air Toxics Assessment as PAH/Particulate Organic	Detected in biosolids nationally (Harrison et al., 2006).	Detected in surface water and/or sediment (USGS, 2007). Detected in surface water (Willamette basin) using passive samplers (SPMD) (DEQ, 2008). Detected in sediments in Oregon (DEQ LASAR).	Not detected in fish sampled in U.S. lakes and reservoirs (Stahl et al., 2009).	

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)		
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)
				Matter (POM). Magnitude: High			
50-32-8 MCL	Benzo(a)pyrene PBT score: 4	Small amounts used in biochemical, biomedical, laboratory, and/or cancer research (ROC, 2005). Used in coal-tar-based asphalt sealant (Van Metre, et al. 2009)	Ubiquitous pollutant formed by incomplete combustion of carbon-containing fuels. Dust from coal-tar-based sealed asphalt may move to adjacent soil or water.	No data available for this particular PAH. U.S. total annual releases (total PAH): ≈555,000 kg (2008 TRI). Oregon total annual releases (total PAH): ≈5,700 kg (2008 TRI). Included in 2002 National Air Toxics Assessment as PAH/Particulate Organic Matter (POM). Magnitude: High	Not detected in WWTP effluent discharged into the Columbia River (USGS, 2009). Detected in biosolids nationally (Harrison et al., 2006) and sludge (USEPA, 2009b).	Detected in surface water and/or sediment (USGS, 2007). Detected in groundwater in Oregon (Kennedy/Jenks, 2009).	Not detected in fish sampled in U.S. lakes and reservoirs (Stahl et al., 2009). Detected in streams nationally (Kolpin, et al., 2002) Detected in industrial effluent in Oregon (DEQ LASAR).
205-99-2	Benzo(b)fluoranthene PBT score: 4	None.	Ubiquitous pollutant formed by incomplete combustion of carbon-containing fuels.	No data available for this particular PAH. U.S. total annual releases (total PAH): ≈555,000 kg (2008 TRI). Oregon total annual releases (total PAH): ≈5,700 kg (2008 TRI). Included in 2002 National Air Toxics Assessment as PAH/Particulate Organic Matter (POM). Magnitude: High	Detected in biosolids nationally (Harrison et al., 2006).	Detected in surface water and/or sediment (USGS, 2007). Detected in surface water (Willamette basin) using passive samplers (SPMD) (DEQ, 2008).	Not detected in fish sampled in U.S. lakes and reservoirs (Stahl et al., 2009).
191-24-2	Benzo(g,h,i)perylene PBT score: 4	None.	Ubiquitous pollutant formed by incomplete combustion of carbon-containing fuels.	U.S. total annual releases: ≈35,000 kg (2008 TRI). Oregon total annual releases: ≈87 kg (2008 TRI). Included in 2002 National Air Toxics Assessment as PAH/Particulate Organic Matter (POM).	Detected in biosolids nationally (Harrison et al., 2006).	Detected in surface water and/or sediment (USGS, 2007). Detected in surface water (Willamette basin) using passive samplers (SPMD) (DEQ, 2008). Detected in sediments in	Not detected in fish sampled in U.S. lakes and reservoirs (Stahl et al., 2009). Detected in landfill leachate in Oregon (DEQ LASAR).

POLYCYCLIC AROMATIC HYDROCARBONS (PAHS)

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)		
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)
				Magnitude: Med		Oregon (DEQ LASAR).	
207-08-9	Benzo(k)fluoranthene PBT score: 4	Small amounts used in biochemical, biomedical, laboratory, and/or cancer research (ROC, 2005).	Ubiquitous pollutant formed by incomplete combustion of carbon-containing fuels.	No data available for this particular PAH. U.S. total annual releases (total PAH): ≈555,000 kg (2008 TRI). Oregon total annual releases (total PAH): ≈5,700 kg (2008 TRI). Included in 2002 National Air Toxics Assessment as PAH/Particulate Organic Matter (POM). Magnitude: High	Detected in biosolids nationally (Harrison et al., 2006).	Detected in surface water and/or sediment (USGS, 2007).	None.
218-01-9	Chrysene [benzo(a)phenanthrene] PBT score: 4	Used in the production of some dyes.	Ubiquitous pollutant formed by incomplete combustion of carbon-containing fuels.	No data available for this particular PAH. U.S. total annual releases (total PAH): ≈555,000 kg (2008 TRI). Oregon total annual releases (total PAH): ≈5,700 kg (2008 TRI). Included in 2002 National Air Toxics Assessment as PAH/Particulate Organic Matter (POM). Magnitude: High	Detected in biosolids nationally (Harrison et al., 2006).	Detected in surface water and/or sediment (USGS, 2007). Detected in surface water (Willamette basin) using passive samplers (SPMD) (DEQ, 2008).	Not detected in fish sampled in U.S. lakes and reservoirs (Stahl et al., 2009).
53-70-3	Dibenz(a,h)anthracene PBT score: 4	Small amounts used in biochemical, biomedical, laboratory, and/or cancer research (ROC, 2005).	Ubiquitous pollutant formed by incomplete combustion of carbon-containing fuels.	No data available for this particular PAH. U.S. total annual releases (total PAH): ≈555,000 kg (2008 TRI). Oregon total annual releases (total PAH): ≈5,700 kg (2008 TRI). Included in 2002 National Air Toxics Assessment as	Detected in biosolids nationally (Harrison et al., 2006).	No data available.	Not detected in fish sampled in U.S. lakes and reservoirs (Stahl et al., 2009).

POLYCYCLIC AROMATIC HYDROCARBONS (PAHS)

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)		
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)
				PAH/Particulate Organic Matter (POM). Magnitude: High			
206-44-0	Fluoranthene [Benzo(j,k)fluorene] PBT score: 3	None.	Ubiquitous pollutant formed by incomplete combustion of carbon-containing fuels.	No data available for this particular PAH. U.S. total annual releases (total PAH): ≈555,000 kg (2008 TRI). Oregon total annual releases (total PAH): ≈5,700 kg (2008 TRI). Included in 2002 National Air Toxics Assessment as PAH/Particulate Organic Matter (POM). Magnitude: High	Detected in WWTP effluent discharged into the Columbia River (USGS, 2009). Detected in sewage sludge (USEPA, 2009b).	Detected in surface water and/or sediment (USGS, 2007). Detected in surface water (Willamette basin) using passive samplers (SPMD) (DEQ, 2008). Detected in groundwater & sediments in Oregon (DEQ LASAR).	Not detected in fish sampled in U.S. lakes and reservoirs (Stahl et al., 2009). Detected in streams nationally (Kolpin, et al., 2002). Detected in industrial waste, & landfill leachate in Oregon (DEQ LASAR).
193-39-5	Indeno(1,2,3-cd)pyrene PBT score: 4	Small amounts used in biochemical, biomedical, laboratory, and/or cancer research (ROC, 2005).	Ubiquitous pollutant formed by incomplete combustion of carbon-containing fuels.	No data available for this particular PAH. U.S. total annual releases (total PAH): ≈555,000 kg (2008 TRI). Oregon total annual releases (total PAH): ≈5,700 kg (2008 TRI). Included in 2002 National Air Toxics Assessment as PAH/Particulate Organic Matter (POM). Magnitude: High	Detected in biosolids nationally (Harrison et al., 2006).	No data available. Detected in sediments & fish in Oregon (DEQ LASAR).	Not detected in fish sampled in U.S. lakes and reservoirs (Stahl et al., 2009).
832-69-9	Methylphenanthrene, 1-	None.	Ubiquitous pollutant formed by incomplete combustion of carbon-containing fuels. Human exposure occurs primarily through the smoking of tobacco, inhalation of polluted air and by ingestion of food and water	No data available for this particular PAH. U.S. total annual releases (total PAH): ≈555,000 kg (2008 TRI). Oregon total annual releases (total PAH): ≈5,700 kg (2008 TRI)	No data available.	Detected in surface water (Willamette basin) using passive samplers (SPMD) (DEQ, 2008). Detected in sediment in Oregon (DEQ LASAR).	None.

POLYCYCLIC AROMATIC HYDROCARBONS (PAHS)

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)			
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)	
	PBT score: 3		contaminated by combustion effluents.	TRI. Included in 2002 National Air Toxics Assessment as PAH/Particulate Organic Matter (POM). Magnitude: High				
2381-21-7	Methylpyrene, 1- PBT score: 3	Minor uses as a research reagent.	Ubiquitous pollutant formed by incomplete combustion of carbon-containing fuels. Found in cigarette smoke, car exhaust, cellulose pyrolysates, and as a pollutant in oysters, crabs, and finfish.	No data available for this particular PAH. U.S. total annual releases (total PAH): ≈555,000 kg (2008 TRI). Oregon total annual releases (total PAH): ≈5,700 kg (2008 TRI). Included in 2002 National Air Toxics Assessment as PAH/Particulate Organic Matter (POM). Magnitude: High	No data available.	No data available.	None.	POLYCYCLIC AROMATIC HYDROCARBONS (PAHS)
85-01-8	Phenanthrene PBT score: 3	None.	Ubiquitous pollutant formed by incomplete combustion of carbon-containing fuels.	No data available for this particular PAH. U.S. total annual releases (total PAH): ≈555,000 kg (2008 TRI). Oregon total annual releases (total PAH): ≈5,700 kg (2008 TRI). Included in 2002 National Air Toxics Assessment as PAH/Particulate Organic Matter (POM). Magnitude: High	Not detected in WWTP effluent discharged into the Columbia River (USGS, 2009).	Detected in surface water and/or sediment (USGS, 2007). Detected in surface water (Willamette basin) using passive samplers (SPMD) (DEQ, 2008). Detected in groundwater in Oregon (DEQ LASAR).	Not detected in fish sampled in U.S. lakes and reservoirs (Stahl et al., 2009). Detected in streams nationally (Kolpin, et al., 2002). Detected in industrial waste and landfill leachate in Oregon (DEQ LASAR).	

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)			
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)	
129-00-0	Pyrene PBT score: 3	None.	Ubiquitous pollutant formed by incomplete combustion of carbon-containing fuels.	No data available for this particular PAH. U.S. total annual releases (total PAH): ≈555,000 kg (2008 TRI). Oregon total annual releases (total PAH): ≈5,700 kg (2008 TRI). Included in 2002 National Air Toxics Assessment as PAH/Particulate Organic Matter (POM). Magnitude: High	Detected in WWTP effluent discharged into the Columbia River (USGS, 2009).	Detected in surface water and/or sediment (USGS, 2007). Detected in surface water (Willamette basin) using passive samplers (SPMD) (DEQ, 2008). Detected in sediments in Oregon (DEQ LASAR).	Detected in <1% of fish sampled in U.S. lakes and reservoirs (Stahl et al., 2009). Detected in streams nationally (Kolpin, et al., 2002). Detected in industrial waste in Oregon (DEQ LASAR).	POLYCYCLIC AROMATIC HYDROCARBONS (PAHS)
INORGANIC & ORGANIC METALS								
7440-38-2 MCL	Arsenic Compounds [dissolved] PBT score: N/A	Majority used mainly in the production of chromated copper arsenate (CCA) wood preservatives. Arsenic compounds were also used in fertilizers, fireworks, herbicides, and insecticides (ATSDR, 2007a).	Occurs naturally in rocks and soils. Industrial discharges (primarily wood treatment facilities), leaching from treated wood products, application of As-containing agricultural products, releases from chicken CAFOs, where it is a feed additive.	Foreign sources have supplied arsenic trioxide and arsenic metal to U.S. arsenic-using industries since 1985; all arsenic is now imported. Imports of arsenic compounds in 2001-03 averaged over 18 million kg/y (USGS, 2007). U.S. total annual releases: ≈33 million kg (2008 TRI). Oregon total annual releases: ≈850 kg (2008 TRI). Magnitude: Med	Detected in sewage sludge (USEPA, 2009b). Detected in municipal effluent, municipal influent, and septic effluent in Oregon (DEQ LASAR)	Detected in surface water and/or sediment (USGS, 2007). Detected in groundwater, surface water, and stormwater in Oregon (DEQ LASAR). Exceeded water quality standards in Oregon (DEQ, 2007b).	Detected in < 1% of fish sampled in U.S. lakes and reservoirs (Stahl et al., 2009). Detected in landfill leachate in Oregon (DEQ LASAR).	INORGANIC & ORGANIC METALS
7440-43-9 MCL	Cadmium Compounds [dissolved] PBT score: N/A	Cadmium, its alloys, and its compounds are used in a variety of consumer and industrial materials. Its dominant use is in active electrode materials in Ni-Cd batteries (83% of total cadmium use) (ATSDR, 2008). Other uses have	Naturally occurring. There are 6 facilities in Oregon that produce, process, or use cadmium and 4 that produce, process, or use cadmium compounds (ATSDR, 2008). Industrial discharges.	U.S. total annual releases: ≈1.4 million kg (2008 TRI). Oregon total annual releases: ≈6,900 kg (2008 TRI). Magnitude: High	Detected in biosolids nationally (USEPA, 2009). Detected in municipal influent & effluent in Oregon (DEQ LASAR)	Detected in surface water and/or sediment (USGS, 2007). Detected in surface water, stormwater, & groundwater in Oregon (DEQ LASAR). Exceeded water quality standards in Oregon (DEQ,	None. Detected in human blood serum at 0.30 ug/L (CDC, 2009). Detected in industrial effluent and landfill leachate in Oregon (DEQ LASAR).	

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)			
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)	
		been declining.				2007b).		
7439-92-1 MCL	Lead Compounds [dissolved] PBT score: N/A	Production of lead-acid batteries is the major current use. Other uses include lead alloys used in bearings, brass and bronze and some solders; sheets and pipe for nuclear and x-ray shielding, cable covering, noise control materials; chemical resistant linings; ammunition; and pigments and lead compounds used in glassmaking, ceramic glazes, plastic stabilizers, caulk, and paints (ATSDR, 2007b).	Occurs naturally in rocks and soils. Lead-based paint on old buildings and lead-based paint chips. Industrial discharges, incineration of lead-containing products, improper disposal or recycling of lead-acid batteries.	Almost all primary and secondary (scrap) lead used in the U.S. is obtained within the U.S. (ATSDR, 2007b). U.S. total annual releases (lead and lead compounds): ≈220 million kg (2008 TRI). Oregon total annual releases (lead and lead compounds): ≈547,000 kg (2008 TRI). Magnitude: High	Detected during national sewage sludge survey (USEPA, 2009b). Detected in municipal influent & effluent in Oregon (DEQ LASAR).	Detected in surface water and/or sediment (USGS, 2007). Detected in surface water, stormwater, & groundwater in Oregon (DEQ LASAR). Exceeded water quality standards in Oregon (DEQ, 2007b).	None. Detected in human blood serum at 1.43 ug/dL (CDC, 2009). Detected in industrial effluent and landfill leachate in Oregon (DEQ LASAR).	INORGANIC & ORGANIC METALS
22967-92-6 7487-94-7 MCL	Methylmercury PBT score: 4	None.	Methylmercury is formed primarily by the bacterial methylation of inorganic mercury in aquatic environments.	Data available for mercury and mercury compounds only. There is no known commercial or industrial production or use of methylmercury. Magnitude: Insufficient info, presumed Low	Detected in sewage sludge (USEPA, 2009). Detected in WWTP effluent in California (Cal EPA, 2010).	Detected in surface water and/or sediment (USGS, 2007). Detected in fish tissue from the Willamette River (Henny et al., 2003). Detected in osprey eggs from the Columbia River (Henny et al., 2008abab). Mercury Exceeded water quality standards in Oregon (DEQ, 2007b).	None.	

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)			
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)	
7782-49-2 MCL	Selenium Compounds [total] PBT score: N/A	Numerous industrial and commercial uses. Elemental selenium is obtained primarily as a byproduct of copper refining. In humans and animals, it is an essential nutrient that plays a role in protecting tissues from oxidative damage (ATSDR, 2003a).	Ubiquitous in the environment, being released from both natural and anthropogenic sources. Principal anthropogenic releases are due to the burning of coal and other fossil fuels, and from other industrial processes such as the production of rubber.	U.S. total annual releases (selenium and selenium compounds): ≈1.5 million kg (2008 TRI). Oregon total annual releases (lead and lead compounds): ≈5,600 kg (2008 TRI). Magnitude: High	Detected during national sewage sludge survey (USEPA, 2009b). Detected in municipal influent & effluent in Oregon (DEQ LASAR)	Detected in surface water and/or sediment (USGS, 2007). Detected in surface water, drinking water, groundwater, sediment, and fish tissue in Oregon (DEQ LASAR).	Detected in industrial effluent and landfill leachate in Oregon (DEQ LASAR)	INORGANIC & ORGANIC METALS
INDUSTRIAL CHEMICALS								
98-07-7	Benzotrichloride [trichloromethylbenzene] PBT score: 3	Used extensively as a chemical intermediate - important derivatives are used for UV stabilization of plastics. Also used as a dye intermediate in the preparation of 8 dyes and pigments, including 5 produced in commercial quantities in the U.S. (ROC, 2005).	Releases following consumer use of pharmaceuticals made with it. Industrial fugitive emissions* expected to be very low due to its ability to hydrolyze rapidly in the presence of moisture (ROC, 2005). [*Air pollutants released to the air other than those from stacks or vents; typically small releases from leaks in plant equipment such as valves, pump seals, flanges, sampling connections, etc.]	U.S. total annual releases: ≈60 kg (2008 TRI). Oregon total annual releases: 0 kg (2008 TRI). U.S. annual production capacity (2001): 14 - 32 million kg. Magnitude: Low	No data available.	No data available.	None.	INDUSTRIAL CHEMICALS
434-90-2	Decafluorobiphenyl PBT score: 5	Analytical internal standard, synthesis of fluorinated polymers, optical and semiconductor research.	Discharges from laboratories or industrial research laboratories.	No data available. Magnitude: Insufficient info	Not detected in WWTP effluent discharged into the Columbia River (USGS, 2009).	Detected in surface water and/or sediment (USGS, 2007).	None.	
29082-74-4	Octachlorostyrene	By-product of the electrolytic production of chlorine. No commercial production or uses (Kaminsky and Hites, 1984).	Formed when graphite anodes are used during electrolytic production of magnesium from magnesium chloride. By-product of wastes from the electrolytic production of	U.S. total annual releases (total chlordane): ≈140 kg (2008 TRI). Oregon total annual releases (total chlordane): 0 kg (2008	Not detected in WWTP effluent discharged into the Columbia River (USGS, 2009).	Detected in surface water and/or sediment (USGS, 2007). Detected in fish tissue from the Willamette River (Henny	Detected in 1-5% of fish sampled in U.S. lakes and reservoirs (Stahl et al., 2009).	

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)			
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)	
	hexabutyldistannoxane] PBT score: N/A	chemical intermediate. Uses as a marine biocide were cancelled in the U.S. in 2005. Only two products in Oregon contain any TBTO and they are registered as hard-surface disinfectants for poultry houses.	uses as a marine anti-fouling paint. Releases from chicken CAFOs.	kg/y (ECHA, 2009). Magnitude: Insufficient info				
5103-71-9 MCL	Chlordane, cis- PBT score: 6	Legacy pesticide. A component of the chlordane mixture (ATSDR, 1994). Registration for use of chlordane in the U.S. cancelled in 1988. As of 1994, chlordane was still produced in the U.S. for export.	Prior agricultural uses may have left residues which may be released to surface water as a result of agricultural runoff or soil/land disturbance. Current exposures would be through air in homes treated for termites pre-1988.	U.S. total annual releases (total chlordane): ≈2,222 kg (2008 TRI). Oregon total annual releases (total chlordane): ≈990 kg (2008 TRI). Not among the top 100 active ingredients used in Oregon in 2007 (ODA PURS 2007). Magnitude: Low	Detected in WWTP effluent discharged into the Columbia River (USGS, 2009). Detected in 89% of influent samples and 0% of effluent samples at 9 U.S. POTWs (USEPA, 2009a).	Detected in fish tissue from the Willamette River (Henny et al., 2003). Detected in osprey eggs from the Columbia River (Henny et al., 2008ab). Detected in fish tissue from Willamette River Basin (DEQ TMP, 2010). Chlordane exceeded water quality standards in Oregon (DEQ, 2007b).	Technical grade chlordane is a mixture of at least 50 compounds; the major constituents are cis- and trans-chlordane, heptachlor, <i>cis</i> - and <i>trans</i> -nonachlor, and <i>alpha</i> -, <i>beta</i> - and <i>gamma</i> -chlordane (ATSDR, 1994). Detected in streams nationally (Kolpin, et al., 2002). Detected in surface waters using passive samplers, SPMDs, in Washington state as total chlordane (Sandvik, 2009).	PESTICIDES
5103-74-2 MCL	Chlordane, trans- PBT score: 6	Legacy pesticide. A component of the chlordane mixture (ATSDR, 1994). Registration for use of chlordane in the U.S. cancelled in 1988. As of 1994, chlordane was still produced in the U.S. for export.	Prior agricultural uses may have left residues which may be released to surface water as a result of agricultural runoff or soil/land disturbance. Current exposures would be through air in homes treated for termites pre-1988.	U.S. total annual releases (total chlordane): ≈2,222 kg (2008 TRI). Oregon total annual releases (total chlordane): ≈990 kg (2008 TRI). Not among the top 100 active ingredients used in Oregon in 2007 (ODA PURS 2007). Magnitude: Low	Detected in WWTP effluent discharged into the Columbia River (USGS, 2009).	Detected in fish tissue from the Willamette River (Henny et al., 2003). Detected in osprey eggs from the Columbia River (Henny et al., 2008ab). Detected in fish tissue from Willamette River Basin (DEQ TMP, 2010). Chlordane exceeded water quality standards in Oregon (DEQ, 2007b).	Technical grade chlordane is a mixture of at least 50 compounds; the major constituents are cis- and trans-chlordane, heptachlor, <i>cis</i> - and <i>trans</i> -nonachlor, and <i>alpha</i> -, <i>beta</i> - and <i>gamma</i> -chlordane (ATSDR, 1994). Detected in surface waters using passive samplers, SPMDs, in Washington state as total chlordane (Sandvik, 2009).	
143-50-0	Chlordecone [Kepone]	Legacy pesticide. Registration cancelled in 1978.	Prior agricultural uses may have left residues which may be released to surface water as a result of agricultural runoff	Prior to cancellation, ≈400,000 kg/y were manufactured in the U.S., 99% of which was exported	No data available.	No data available.	Detected in 10-15% of fish sampled in U.S. lakes and reservoirs (Stahl et al., 2009).	

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)			
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)	
	PBT score: 4	Used until 1978 as an insecticide for leaf-eating insects, ants and cockroaches, as a larvicide for flies and on bananas, non-bearing citrus trees, tobacco, ornamental shrubs, lawns, turf, and flowers (ATSDR, 1995).	or soil/land disturbance.	(ROC, 2005). Magnitude: Low				
2921-88-2	Chlorpyrifos PBT score: 4	Current-use pesticide. A broad spectrum organophosphate insecticide/acaricide used to control a variety of insects. Once was one of the most widely used household pesticides. In 1994, was ranked twelfth in frequency of indoor pesticide applications and fifth in frequency of outdoor pesticide applications.	May be released in fugitive emissions* during its production and in wastewater effluent. Also released during its application as a pesticide and may be released to surface water as a result of agricultural runoff. Runoff from homeowner use of pesticides, particularly lawn care products. Waste water from indoor homeowner uses of products containing this chemical is discharged into rivers and lakes through treated wastewater or to land through application of sewage sludge. [*Air pollutants released to the air other than those from stacks or vents; typically small releases from leaks in plant equipment such as valves, pump seals, flanges, sampling connections, etc.]	In 1982, total agricultural use of chlorpyrifos was estimated at 2.2-3.2 million kg and industrial uses ranged between 0.68 and 1.04 million kg (ATSDR, 1997). Annual application for urban termite control is estimated at ≈727,000 kg (ATSDR, 1997). #24 (≈105,685 kg/y) among the top 100 active ingredients used in Oregon in 2007 (ODA PURS 2007). Stored in 141 locations within Oregon. Maximum average storage as liquid 50-199 gallons; maximum storage as liquid 50-199 gallons. Maximum average storage as solid 1,000-4,999 pounds; maximum storage as solid 10,000-49,999 pounds (Oregon State Fire Marshall 2009). Magnitude: High	Detected in WWTP effluent discharged into the Columbia River (USGS, 2009). Detected in 67% of influent samples and 0% of effluent samples at 9 U.S. POTWs (USEPA, 2009a). Detected in wastewater and biosolids (Kolpin et al., 2002; Harrison et al., 2006).	Detected in surface water and/or sediment (USGS, 2007). Detected in surface waters (DEQ PSP, 2010). Detected in groundwater in Oregon (DEQ LASAR). Exceeded water quality standards in Oregon (DEQ, 2007b). Detected in 14% of water samples in Willamette River Basin (USGS, 1997).	Not detected in fish sampled in U.S. lakes and reservoirs (Stahl et al., 2009). Selected by U.S. EPA for Tier 1 screening as an endocrine disruptor (EDSP). Detected in human urine at 1.76 ug/L (CDC, 2009). Detected in streams nationally (Kolpin, et al., 2002). Detected in surface waters in Washington and lower Columbia River using passive samplers (SPMDs) (Sandvik, 2009).	PESTICIDES
91465-08-6	Cyhalothrin, -lambda	Pyrethroid pesticide. Has primarily public health and residential uses (bedbugs, beetles, houseflies, ked, lice, mosquitoes, moths,	Waste water from indoor consumer and domestic uses of products containing this chemical is discharged into rivers and lakes through treated wastewater or to land	Reported total annual use in U.S. in 2001: not available (ATSDR, 2003b). Not among the top 100 active ingredients used in Oregon in	Detected in WWTP effluent discharged into the Columbia River (USGS, 2009).	No data available.	None.	

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)			
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)	
	PBT score: 4	weevils).	through application of sewage sludge.	2007 (ODA PURS 2007). Stored in 22 locations within Oregon. Maximum average storage as liquid 50-199 gallons; maximum storage as liquid 200-499 gallons. Maximum average storage as solid 1,000-4,999 pounds; maximum storage as solid 10,000-49,999 pounds (Oregon State Fire Marshall 2009). Magnitude: Med				
72-54-8	DDD, 4,4'- PBT score: 5	Legacy pesticide. Limited commercial uses as a pesticide (ATSDR, 2002a).	Degradation product of DDT. Prior agricultural uses may have left residues of DDT which may be released to surface water as a result of agricultural runoff or soil/land disturbance, then degrade into DDD.	No data available. Magnitude: Insufficient info	Not detected in WWTP effluent discharged into the Columbia River (USGS, 2009). Detected in 22% of influent samples and 0% of effluent samples at 9 U.S. POTWs (USEPA, 2009a). Reported in effluent and biosolids (Harrison et al., 2006).	Detected in fish tissue from the Willamette River (Henny et al., 2003). Detected in osprey eggs from the Columbia River (Henny et al., 2008ab). Detected in surface water (Willamette basin) using passive samplers (SPMD) (DEQ, 2008). Detected in fish tissue from Willamette River Basin (DEQ TMP, 2010). Detected in surface waters (DEQ PSP, 2010).	Detected in surface waters in Washington and lower Columbia River using passive samplers (SPMDs) (Sandvik, 2009).	PESTICIDES

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)			
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)	
72-55-9	DDE, 4,4'- PBT score: 6	Degradation product. No commercial uses (ATSDR, 2002a).	Degradation product of DDT. Prior agricultural uses may have left residues of DDT which may be released to surface water as a result of agricultural runoff or soil/land disturbance, then degrade into DDE.	No data available. Magnitude: Insufficient info	Not detected in WWTP effluent discharged into the Columbia River (USGS, 2009). Detected in 89% of influent samples and 0% of effluent samples at 9 U.S. POTWs (USEPA, 2009a). Reported in biosolids (Harrison et al., 2006).	Detected in surface water and/or sediment (USGS, 2007). Detected in fish tissue from the Willamette River (Henny et al., 2003). Detected in osprey eggs from the Columbia River (Henny et al., 2008ab). Detected in groundwater, sediment, & surface water (DEQ LASAR). Detected in surface waters (DEQ PSP, 2010). Detected in fish tissue from Willamette River Basin (DEQ TMP, 2010). Exceeded water quality standards in Oregon (DEQ, 2007b).	Detected in human blood serum at 238 ng/g; lipid adjusted (CDC, 2009). Detected in surface waters in Washington and lower Columbia River using passive samplers (SPMDs) (Sandvik, 2009). Detected in industrial effluent in Oregon (DEQ LASAR).	PESTICIDES
50-29-3	DDT, 4,4'- PBT score: 6	Legacy pesticide. U.S. registration canceled in 1973, with the exception of a few emergency uses. U.S. production for export did not end until 1985. Production continues in Mexico and China (ATSDR, 2002a).	Prior agricultural uses may have left residues which may be released to surface water as a result of agricultural runoff or soil/land disturbance.	Peak production was 1962 at ≈ 85 million kg. Cumulative world production estimated at 2 billion kg (ATSDR, 2002a). Magnitude: High	Not detected in WWTP effluent discharged into the Columbia River (USGS, 2009). Detected in 22% of influent samples and 0% of effluent samples at 9 U.S. POTWs (USEPA, 2009a). Reported in biosolids (Harrison et al., 2006).	Detected in fish tissue from the Willamette River (Henny et al., 2003). Detected in osprey eggs from the Columbia River (Henny et al., 2008ab). Detected in fish tissue from Willamette River Basin (DEQ TMP, 2010). Detected in surface waters (DEQ PSP, 2010). Detected in groundwater & sediment in Oregon (DEQ LASAR). Exceeded water quality standards in Oregon (DEQ, 2007b).	Detected in human blood serum at 19.5 ng/g; lipid adjusted (CDC, 2009). Detected in surface waters in Washington and lower Columbia River using passive samplers (SPMDs) (Sandvik, 2009).	

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)			
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)	
52918-63-5	Deltamethrin [decamethrin] PBT score: 4	Pyrethroid pesticide. Unlike other pyrethroids, it consists of one pure isomer (ATSDR, 2003b). Registered for use on cotton, sorghum, artichokes, pears and a variety of vegetable, fruit, and tree nut crops for the control of a broad spectrum of pests including mites, ants, weevils, and beetles. It is also registered for use in residential and industrial applications for the control of cockroaches, pests of stored commodities, and other nuisance or destructive insects and ticks Used in areas such as golf courses, ornamental gardens, lawns, outdoor perimeter treatments, indoors as spot and crack and crevice treatments, and pet collars.	Potential runoff from outdoor use of pesticides, particularly lawn care products. Waste water from indoor homeowner uses of products containing this chemical is discharged into rivers and lakes through treated wastewater or to land through application of sewage sludge.	Reported total annual use in U.S. in 2001: not available (ATSDR, 2003b). Not among the top 100 active ingredients used in Oregon in 2007 (ODA PURS). Stored in 4 locations within Oregon. Maximum average storage as liquid 0-4 gallons; maximum storage as liquid 0-4 gallons. Maximum average storage as solid 20-49 pounds; maximum storage as solid 50-199 pounds (Oregon State Fire Marshall 2009). Magnitude: Low	No data available.		Detected in urban stream sediment (Weston et al., 2009). Metabolites found in children (Lu et al., 2006).	PESTICIDES

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)			
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)	
	PBT score: 6		Waste water from indoor homeowner uses of products containing this chemical is discharged into rivers and lakes through treated wastewater or to land through application of sewage sludge. [*Air pollutants released to the air other than those from stacks or vents; typically small releases from leaks in plant equipment such as valves, pump seals, flanges, sampling connections, etc.]	gallons; maximum storage as liquid 50-199 gallons. Maximum average storage as solid 50-199 pounds; maximum storage as solid 200-499 pounds (Oregon State Fire Marshall 2009). Magnitude: Low				
60-57-1	Dieldrin PBT score: 6	Legacy pesticide. Primary use was for the control of termites around buildings, corn pests by application to soil and in the citrus industry. USDA canceled all uses in 1970; all registered uses canceled by USEPA or voluntarily surrendered by 1974 (ATSDR, 2002b).	Runoff from structural pest control by professional applicators and/or homeowner use of insecticides. Prior agricultural uses may have left residues which may be released to surface water as a result of agricultural runoff or soil/land disturbance.	Between 1966 and 1970, annual use dropped from ≈454,000 to ≈304,000 kg (ATSDR, 2002b). Magnitude: High	Detected in WWTP effluent discharged into the Columbia River (USGS, 2009). Detected in 89% of influent samples and 56% of effluent samples at 9 U.S. POTWs (USEPA, 2009a). Detected in wastewater and biosolids (Kolpin et al., 2002; Harrison et al., 2006).	Detected in fish tissue from the Willamette River (Henny et al., 2003). Detected in osprey eggs from the Columbia River (Henny et al., 2008ab). Detected in human blood serum at 0.138 ng/g (CDC, 2009). Detected in fish tissue from Willamette River Basin (DEQ TMP, 2010). Detected in surface waters (DEQ PSP, 2010). Detected in stormwater & sediment in Oregon (DEQ LASAR). Exceeded water quality standards in Oregon (DEQ, 2007b).	Detected in 5-10% of fish sampled in U.S. lakes and reservoirs (Stahl et al., 2009). Detected in streams nationally (Kolpin, et al., 2002). Detected in surface waters in Washington and lower Columbia River using passive samplers (SPMDs) (Sandvik, 2009). Detected in landfill leachate & industrial effluent in Oregon (DEQ LASAR).	PESTICIDES
88-85-7 MCL	Dinoseb	Legacy pesticide. A selective non-systemic herbicide and desiccant that was used on soybeans, vegetables,	Prior agricultural uses may have left residues which may be released to surface water as a result of agricultural runoff or soil/land disturbance.	U.S. production was reported as 2.8 million kg in 1982 (USEPA drinking water regulations fact sheet).	No data available.	Detected in 1% of water samples in Willamette River Basin (USGS, 1997).	None.	

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)			
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)	
	PBT score: 3	fruits and nuts, citrus, and other field crops for the selective control of grass and broadleaf weeds until its cancellation in 1986. Cancelled in Canada in 1990 (Environment Canada).		Historic Magnitude: High				
1031-07-8	Endosulfan sulfate PBT score: 3	Pesticide degradate.* Degradation product of endosulfan. In the U.S., endosulfan is used mainly on tobacco and fruit crops (ATSDR, 2000a). [* Product of the environmental transformations of a pesticide. Degradates can have properties similar to the original pesticide.]	Current agricultural uses of endosulfan may have left residues which may be released to surface water as a result of agricultural runoff or soil/land disturbance.	Endosulfan has not been produced in the U.S. since 1982; however, it is still imported for use in chemical formulations (ATSDR, 2000a). #78 (≈11,000 kg/y) among the top 100 active ingredients used in Oregon in 2007 (ODA PURS 2007). Magnitude: High	Detected in 0% of influent samples and 11% of effluent samples at 9 U.S. POTWs (USEPA, 2009a). Detected in biosolids nationally (Harrison et al., 2006).	Detected in surface water and/or sediment (USGS, 2007). Detected in fish tissue from Willamette River Basin (DEQ TMP, 2010). Detected in surface waters (DEQ PSP, 2010). Detected in groundwater & sediment in Oregon (DEQ LASAR).	Detected in <1% of fish sampled in U.S. lakes and reservoirs (Stahl et al., 2009). Detected in surface waters in Washington using passive samplers (SPMDs) (Sandvik, 2009) Detected in industrial effluent in Oregon (DEQ LASAR).	PESTICIDES
72-20-8 MCL	Endrin PBT score: 6	Legacy pesticide. Used as an insecticide, rodenticide, and avicide to control cutworms, voles, grasshoppers, borers, and other pests on cotton, sugarcane, tobacco, apple orchards, and grain; also used on bird perches. No longer manufactured in the U.S.; final voluntary cancellation of registration occurred in 1991 (ATSDR, 1996).	Prior agricultural uses may have left residues which may be released to surface water as a result of agricultural runoff or soil/land disturbance.	Estimated annual use in U.S. prior to 1983 was 6,250 kg/y (ATSDR, 1996). Historic Magnitude: Med	Detected in biosolids nationally (Harrison et al., 2006). Detected in sewage sludge (Sánchez-Brunete et al., 2008; WHO, 1992).	Reported in Oregon surface water (Jenkins, <i>personal communication</i>). Detected in surface waters (DEQ PSP, 2010). Detected in fish & groundwater in Oregon (DEQ LASAR).	Detected in <1% of fish sampled in U.S. lakes and reservoirs (Stahl et al., 2009). Detected in human blood serum at 5.10 ng/g; lipid adjusted (CDC, 2009).	
66230-04-4	Esfenvalerate	Pyrethroid pesticide. Registered for use on commercial crops; seemingly little or no	May be released in fugitive emissions* during its production and in wastewater effluent. Also released during	Reported total annual use in U.S. in 2001: ≈98,000 kg (ATSDR, 2003b). Not among the top 100 active	No data available.	No data available.	Selected by U.S. EPA for Tier 1 screening as an endocrine disruptor (EDSP).	

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)			
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)	
	PBT score: 5	residential uses.	its application as a pesticide and may be released to surface water as a result of agricultural runoff. [*Air pollutants released to the air other than those from stacks or vents; typically small releases from leaks in plant equipment such as valves, pump seals, flanges, sampling connections, etc.]	ingredients used in Oregon in 2007 (ODA PURS 2007). Stored in 42 locations within Oregon. Maximum average storage as liquid 500-999 gallons; maximum storage as liquid 1000-4999 gallons (Oregon State Fire Marshall 2009). Magnitude: Low				
13356-08-6	Fenbutatin-oxide PBT score: 4	Registered acaricide. Used against mites, aphids, thrips, mealybugs, whiteflies and scales in greenhouse food/non-food and terrestrial food/non-food crops (USEPA RED, 1994). Use restricted to pesticide certified applicators.	Current agricultural uses may have left residues which may be released to surface water as a result of agricultural runoff or soil/land disturbance.	U.S. total annual releases: 0 kg (2008 TRI). Oregon total annual releases: 0 kg (2008 TRI). Not among the top 100 active ingredients used in Oregon in 2007 (ODA PURS 2007). Stored in 9 locations within Oregon. Maximum average storage as liquid 20-49 gallons; maximum storage as liquid 200-499 gallons. Maximum average storage as solid 200-499 pounds; maximum storage as solid 200-499 pounds (Oregon State Fire Marshall 2009). Magnitude: Low	No data available.	No data available.	Selected by U.S. EPA for Tier 1 screening as an endocrine disruptor (EDSP).	PESTICIDES

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)			
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)	
120068-37-3	Fipronil PBT score: 4	Used on a wide range of crop, public hygiene, amenity and veterinary pests. In Frontline flea and tick products such as Top Spot and Spray treatment for animals. Used by nearly 24% of Oregon households (ODA, 2008).	Waste water from indoor consumer and domestic uses of products containing this chemical is discharged into rivers and lakes through treated wastewater or to land through application of sewage sludge.	Not among the top 100 active ingredients used in Oregon in 2007 (ODA PURS 2007). Stored in 7 locations within Oregon. Maximum average storage as liquid 50-199 gallons; maximum storage as liquid 200-499 gallons. Maximum average storage as solid 20-49 pounds; maximum storage as solid 50-199 pounds (Oregon State Fire Marshall 2009). Magnitude: Low	Detected in WWTP effluent discharged into the Columbia River (USGS, 2009). Degradation products - Fipronil sulfide and Fipronil desulfinyl - were also detected. Reported in effluent and sludge (Heidler and Halden, 2009).	Detected in surface water and/or sediment (USGS, 2007).	Degradates* appear more toxic and persistent than the parent compound (Jin et al., 2009). [* Product of the environmental transformations of a pesticide. Degradates can have properties similar to the original pesticide.]	
76-44-8 MCL	Heptachlor PBT score: 6	Legacy pesticide. Nearly all registered uses canceled in 1974; sales voluntarily canceled in 1987; sale, distribution, and shipment of existing stocks prohibited in 1988 (ATSDR, 2007). Used extensively from 1953 to 1974 as a soil and seed treatment to protect corn, small grains, and sorghum. Also used non-agriculturally during this time period to control termites and household insects (ATSDR, 2007) Remaining use is treatment of fire ants in power transformers.	Runoff from structural pest control by professional applicators and/or homeowner use of insecticides to control household pests. Prior agricultural uses may have left residues which may be released to surface water as a result of agricultural runoff or soil/land disturbance.	U.S. total annual releases: ≈1,100 kg (2008 TRI). Oregon total annual releases: ≈885 kg (2008 TRI). Two sites in Oregon in 2004 reported to hold 45-454 kg (ATSDR, 2007c). Magnitude: Low	Detected in 11% of influent samples and 0% of effluent samples at 9 U.S. POTWs (USEPA, 2009a).	Reported in surface water (Jenkins, <i>personal communication</i>). Detected in surface waters (DEQ PSP, 2010). Detected in fish, groundwater, & sediment in Oregon (DEQ LASAR). Exceeded water quality standards in Oregon (DEQ, 2007b).	Detected in 1-5% of fish sampled in U.S. lakes and reservoirs (Stahl et al., 2009). Detected in industrial effluent & landfill leachate in Oregon (DEQ LASAR).	PESTICIDES

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)			
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)	
1024-57-3 MCL	Heptachlor epoxide PBT score: 5	Legacy pesticide. An oxidation product of heptachlor or chlordane; never produced commercially in the U.S. (ATSDR, 2007c).	Runoff from structural pest control by professional applicators and/or homeowner use of insecticides to control household pests. Prior agricultural uses may have left residues which may be released to surface water as a result of agricultural runoff or soil/land disturbance.	No data available specifically for this oxidation product. Magnitude: Insufficient info	Detected in 44% of influent samples and 11% of effluent samples at 9 U.S. POTWs (USEPA, 2009a).	Detected in fish tissue from the Willamette River (Henny et al., 2003). Detected in osprey eggs from the Columbia River (Henny et al., 2008ab). Detected in surface waters (DEQ PSP, 2010). Detected in fish tissue from Willamette River Basin (DEQ TMP, 2010) Detected in groundwater & sediment in Oregon (DEQ LASAR).	Detected in 1-5% of fish sampled in U.S. lakes and reservoirs (Stahl et al., 2009). Detected in human blood serum at 18.9 ng/g; lipid adjusted (CDC, 2009).	PESTICIDES
118-74-1 MCL	Hexachlorobenzene [HCB] PBT score: 5	Legacy pesticide. No current commercial uses as an end-product in the U.S. Registered use as a fungicide on the seeds of onions, sorghum, wheat, and other grains was voluntarily canceled in 1984 (ATSDR, 2002c). Also used in the production of pyrotechnic and ordinance materials for the military, the production of synthetic rubber, as a porosity controller in the manufacture of electrodes, a chemical intermediate in dye manufacturing, and a wood preservative (ATSDR, 2002c).	Emissions as by-product of manufacture of certain chlorinated solvents, pesticides, and herbicides. Also released due to ongoing use in developing countries and improper storage or disposal in developed countries. May be produced as a by-product in waste streams of chlor-alkali and wood preserving plants, in fly ash, and flue gas effluents from municipal incineration Currently produced for on-site use and processing, as a by-product, or as an impurity at 9 U.S. facilities, none in Oregon.	U.S. total annual releases: ≈22,900 kg (2008 TRI). Oregon total annual releases: ≈885 kg (2008 TRI). Magnitude: Med	Detected in WWTP effluent discharged into the Columbia River (USGS, 2009). Detected in 25% of influent samples and 0% of effluent samples at 9 U.S. POTWs (USEPA, 2009a).	Detected in fish tissue from the Willamette River (Henny et al., 2003). Detected in osprey eggs from the Columbia River (Henny et al., 2008ab). Detected in surface water (Willamette basin) using passive samplers (SPMD) (DEQ, 2008). Detected in fish tissue from Willamette River Basin (DEQ TMP, 2010). Detected in sediment in Oregon (DEQ LASAR).	Not detected in fish sampled in U.S. lakes and reservoirs (Stahl et al., 2009). Detected in human blood serum at 15.2 ng/g; lipid adjusted (CDC, 2009). Detected in surface waters in Washington and lower Columbia River using passive samplers (SPMDs) (Sandvik, 2009).	

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)			
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)	
319-84-6	Hexachlorocyclohexane, alpha- PBT score: 4	Legacy pesticide. A component of Lindane (ATSDR, 2005).	Same as for Lindane.	No data available for this specific component of Lindane. Magnitude: Insufficient info	Detected in 11% of influent samples and 0% of effluent samples at 9 U.S. POTWs (USEPA, 2009a). Detected in biosolids nationally (Harrison et al., 2006).	Detected in surface water and/or sediment (USGS, 2007). Detected in fish tissue as alpha-BHC (DEQ TMP, 2010). Detected in groundwater (landfill), surface water, & sediment in Oregon (DEQ LASAR).	Detected in <1% of fish sampled in U.S. lakes and reservoirs (Stahl et al., 2009).	PESTICIDES
319-85-7	Hexachlorocyclohexane, beta- PBT score: 4	Legacy pesticide. A component of Lindane (ATSDR, 2005).	Same as for Lindane.	No data available for this specific component of Lindane. Magnitude: Insufficient info	Detected in 11% of influent samples and 0% of effluent samples at 9 U.S. POTWs (USEPA, 2009a). Detected in biosolids nationally (Harrison et al., 2006).	Detected in surface water (Barnes et al., 2002). Detected in fish tissue from the Willamette River (Henny et al., 2003). Detected in osprey eggs from the Columbia River (Henny et al., 2008ab). Detected in fish, surface water, groundwater, & sediment in Oregon as beta BHC (DEQ LASAR).	Detected in 5-10% of fish sampled in U.S. lakes and reservoirs (Stahl et al., 2009). Detected in human blood serum at 9.68 ng/g; lipid adjusted (CDC, 2009).	
58-89-9	Hexachlorocyclohexane, gamma- [Lindane]	Legacy pesticide. Use as an agricultural pesticide cancelled in 2006; last use in Oregon as a seed treatment in 2009. Current use in FDA-regulated lice creams and shampoos is being phased-out; such products may no longer be available in Oregon.	Prior agricultural uses may have left residues which may be released to surface water as a result of agricultural runoff or soil/land disturbance. Waste water from indoor consumer and domestic uses of products containing this chemical is discharged into rivers and lakes through treated wastewater or to land through application of sewage sludge.	Gamma-HCH is not produced in the U.S. It is imported from France, Germany, Spain, Japan, and China (ATSDR, 2005). Imports declined from 152,000 kg in 1977 to 85,300 kg in 1982; ≈90,000 kg were imported in 2002 (ATSDR, 2005). U.S. total annual releases: ≈565 kg (2008 TRI). Oregon total annual releases: 0 kg (2008 TRI). Stored in 2 locations within Oregon. Maximum average	Detected in 89% of influent samples and 11% of effluent samples at 9 U.S. POTWs (USEPA, 2009a). Detected in biosolids nationally (Harrison et al., 2006).	Detected in fish tissue from the Willamette River (Henny et al., 2003). Detected in fish & sediment in Oregon as gamma- BHC (DEQ LASAR).	Detected in 5-10% of fish sampled in U.S. lakes and reservoirs (Stahl et al., 2009). Detected in landfill leachate in Oregon (DEQ LASAR).	

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)			
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)	
	PBT score: 4			storage as liquid 50-199 gallons; maximum storage as liquid 50-199 gallons (Oregon State Fire Marshall 2009). Magnitude: Low				
465-73-6	Isodrin PBT score: 5	Legacy pesticide. No longer manufactured or used commercially in U.S.; registration canceled prior to 1985 (Colorado Department of Health fact sheet). Banned in the UK and EU.	Prior agricultural uses may have left residues which may be released to surface water as a result of agricultural runoff or soil/land disturbance.	U.S. total annual releases: ≈5 kg (2008 TRI). Oregon total annual releases: 0 kg (2008 TRI). Magnitude: Low	Sampled for but not Detected in biosolids nationally (Harrison et al., 2006).	Detected in surface water and/or sediment (USGS, 2007).	Detected in 1-5% of fish sampled in U.S. lakes and reservoirs (Stahl et al., 2009).	PESTICIDES
330-55-2	Linuron PBT score: 2	Current-use herbicide. Used to control germinating and newly emerging grasses and broad-leafed weeds. Applied to agricultural crops, ornamental bulbs, and poplar trees for use in shelterbelts in the mid-west. In the U.S., most is applied to soybean crops. As of 1995, 23 end-use products and 5 technical products were registered.	May be released in fugitive emissions* during its production and in wastewater effluent. Also released during its application as a pesticide and may be released to surface water as a result of agricultural runoff. [*Air pollutants released to the air other than those from stacks or vents; typically small releases from leaks in plant equipment such as valves, pump seals, flanges, sampling connections, etc.]	U.S. total annual releases: ≈249 kg (2008 TRI). Oregon total annual releases: 0 kg (2008 TRI). Stored in 14 locations within Oregon. Maximum average storage as liquid 500-999 gallons; maximum storage as liquid 1000-4999 gallons (Oregon State Fire Marshall 2009). Magnitude: Low	Sampled for but not detected in effluent or biosolids (Harrison et al., 2006; Heidler and Halden, 2009).	Detected in surface water and/or sediment (USGS, 2007). Detected in surface waters (DEQ PSP, 2010)	Selected by U.S. EPA for Tier 1 screening as an endocrine disruptor (EDSP).	
2385-85-5	Mirex PBT score: 6	Legacy pesticide. Not produced in U.S. since 1978. About 25% used as a pesticide and 75% as an industrial fire retardant additive and for use in various coatings, plastics, rubber, paint, paper, and electrical goods (ATSDR, 1995).	Prior agricultural uses may have left residues which may be released to surface water as a result of agricultural runoff or soil/land disturbance. Leaching from in-use or discarded products. Releases from combustion (e.g., residential fires) or incineration of in-use or	No longer produced commercially in the U.S. Production between 1957 and 1976 was ≈1.5 million kg (ATSDR, 1995). Over 90% of production from the 1950s until 1975 was exported to Latin America, Europe, and Africa.	Reported in effluent (Environment Canada).	Detected in fish tissue from the Willamette River (Henny et al., 2003). Detected in fish tissue from Willamette River Basin (DEQ TMP, 2010).	Detected in 1-5% of fish sampled in U.S. lakes and reservoirs (Stahl et al., 2009). Detected in human blood serum at 13.2 ng/g; lipid adjusted (CDC, 2009).	

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)		
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)
			discarded products.	Historic Magnitude: High			
88671-89-0	Myclobutanil PBT score: 2	Current-use fungicide. Used in commercial agriculture on a wide variety of fruit, vegetable, ornamental and field crops. Also used on commercial and residential lawns and in forestry. 9 products currently registered (NPIRS).	May be released in fugitive emissions* during its production and in wastewater effluent. Also released during its application as a pesticide and may be released to surface water as a result of agricultural runoff. [*Air pollutants released to the air other than those from stacks or vents; typically small releases from leaks in plant equipment such as valves, pump seals, flanges, sampling connections, etc.]	Stored in 28 locations within Oregon. Maximum average storage as liquid 50-199 gallons; maximum storage as liquid 1,000-4,999 gallons. Maximum average storage as solid 50-199 pounds; maximum storage as solid 1,000-4,999 pounds. Other storage as 0-4 cubic feet liquid (Oregon State Fire Marshall 2009). Not among the top 100 active ingredients used in Oregon in 2007 (ODA PURS 2007). Magnitude: Low	No data available.	Detected in surface water and/or sediment (USGS, 2007).	Selected by U.S. EPA for Tier 1 screening as an endocrine disruptor (EDSP).
5103-73-1	Nonachlor, cis- PBT score: 6	Legacy pesticide. A component of the chlordane mixture (ATSDR, 1994). Registration for use of chlordane in the U.S. cancelled in 1988. As of 1994, chlordane was still produced in the U.S. for export.	Prior agricultural uses may have left residues which may be released to surface water as a result of agricultural runoff or soil/land disturbance.	U.S. total annual releases (total chlordane): ≈2,222 kg (2008 TRI). Oregon total annual releases (total chlordane): ≈990 kg (2008 TRI). Not among the top 100 active ingredients used in Oregon in 2007 (ODA PURS 2007). Magnitude: Low	Not detected in WWTP effluent discharged into the Columbia River (USGS, 2009).	Detected in fish tissue from the Willamette River (Henny et al., 2003). Detected in osprey eggs from the Columbia River (Henny et al., 2008ab). Detected in fish tissue from Willamette River Basin (DEQ TMP, 2010)	Technical grade chlordane is a mixture of at least 50 compounds; the major constituents are cis- and trans-chlordane, heptachlor, cis- and trans-nonachlor, and alpha-, beta- and gamma-chlordane (ATSDR, 1994).
39765-80-5	Nonachlor, trans- PBT score: 6	Legacy pesticide. A component of the chlordane mixture (ATSDR, 1994). Registration for use of chlordane in the U.S. cancelled in 1988. As of 1994, chlordane was still produced in the U.S. for export.	Prior agricultural uses may have left residues which may be released to surface water as a result of agricultural runoff or soil/land disturbance.	U.S. total annual releases (total chlordane): ≈2,222 kg (2008 TRI). Oregon total annual releases (total chlordane): ≈990 kg (2008 TRI). Not among the top 100 active ingredients used in Oregon in 2007 (ODA PURS 2007). Magnitude: Low	Detected in 78% of influent samples and 0% of effluent samples at 9 U.S. POTWs (USEPA, 2009a). Detected in WWTP effluent discharged into the Columbia River (USGS, 2009).	Detected in fish tissue from the Willamette River (Henny et al., 2003). Detected in osprey eggs from the Columbia River (Henny et al., 2008ab). Detected in fish tissue from Willamette River Basin (DEQ TMP, 2010)	Technical grade chlordane is a mixture of at least 50 compounds; the major constituents are cis- and trans-chlordane, heptachlor, cis- and trans-nonachlor, and alpha-, beta- and gamma-chlordane (ATSDR, 1994). The most bioaccumulative constituent of chlordane. Detected in human blood serum at 14.7 ng/g; lipid adjusted

PESTICIDES

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)		
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)
							(CDC, 2009).
27304-13-8	Oxychlordane, single isomer PBT score: 6	Legacy pesticide metabolite. A component of the chlordane mixture (ATSDR, 1994). Most persistent metabolite of chlordane. Registration for use of chlordane in the U.S. cancelled in 1988. As of 1994, chlordane was still produced in the U.S. for export.	Prior agricultural uses may have left residues which may be released to surface water as a result of agricultural runoff or soil/land disturbance.	U.S. total annual releases (total chlordane): ≈2,222 kg (2008 TRI). Oregon total annual releases (total chlordane): ≈990 kg (2008 TRI). Not among the top 100 active ingredients used in Oregon in 2007 (ODA PURS 2007). Magnitude: Low	Not detected in WWTP effluent discharged into the Columbia River (USGS, 2009).	Detected in fish tissue from the Willamette River (Henny et al., 2003). Detected in osprey eggs from the Columbia River (Henny et al., 2008ab). Detected in fish tissue from Willamette River Basin (DEQ TMP, 2010).	Detected in human blood serum at 9.37 ng/g; lipid adjusted (CDC, 2009).
42874-03-3	Oxyfluorfen PBT score: 4	Current-use herbicide. Used to control certain annual broadleaf and grassy weeds in vegetables, fruit, cotton, ornamentals and on non-crop areas. Lesser use for weed control in landscapes, patios, driveways, and similar areas at residential sites.	Current agricultural uses may have left residues which may be released to surface water as a result of agricultural runoff or soil/land disturbance. Runoff from current uses of the product, particularly lawn care products.	U.S. total annual releases: ≈76 kg (2008 TRI). Oregon total annual releases: 0 kg (2008 TRI). #40 (≈33,000 kg/y) among the top 100 active ingredients used in Oregon in 2007 (ODA PURS 2007). Stored in 111 locations within Oregon. Maximum average storage as liquid 1,000-4,999 gallons; maximum storage as liquid 1,000-4,999 gallons. Maximum average storage as solid 10,000-49,999 pounds; maximum storage as solid 50,000-99,999 pounds. Other storage 5000-9999 millicuries (Oregon State Fire Marshall 2009). Magnitude: High	No data available.	Detected in surface water and/or sediment (USGS, 2007).	None.
40487-42-1	Pendimethalin	Current-use herbicide. Used primarily to destroy or prevent the growth of	Current agricultural uses may have left residues which may be released to surface water as	U.S. total annual releases: ≈26,700 kg (2008 TRI). Oregon total annual releases:	Not detected in WWTP effluent discharged into the Columbia River (USGS, 2009).	Detected in surface water and/or sediment (USGS, 2007).	Detected in <1% of fish sampled in U.S. lakes and reservoirs (Stahl et al., 2009).

PESTICIDES

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)		
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)
	PBT score: 3	certain plants like weeds. Also used on crops and residential lawns and ornamental plants.	a result of agricultural runoff or soil/land disturbance. Runoff from current uses of the product, particularly lawn care products.	0 kg (2008 TRI). #14 (≈196,000 kg/y) among the top 100 active ingredients used in Oregon in 2007 (ODA PURS 2007). Stored in 87 locations within Oregon. Maximum average storage as liquid 5,000-9,999 gallons; maximum storage as liquid 1,000-4,999 gallons. Maximum average storage as solid 1,000-4,999 pounds; maximum storage as solid 10,000-49,999 pounds (Oregon State Fire Marshall 2009). Magnitude: High		Detected in surface waters (DEQ PSP, 2010).	
1825-21-4	Pentachloroanisole, 2,3,4,5,6- PBT score: 3	Degradation product. Main degradation product (environmental metabolite) of pentachlorophenol (PCP) and pentachloronitrobenzene (PCNB).	Current and historical uses of PCP may have left residues in soils and sediment which continue to leach into the environment and then degrade into pentachloroanisole.	U.S. total annual PCP releases: ≈2,300 kg (2008 TRI). Oregon total annual PCP releases: ≈1,090 kg (2008 TRI). PCP is #67 (≈15,425 kg/y) among the top 100 active ingredients used in Oregon in 2007 (ODA PURS 2007). Magnitude: Med	No data available.	No data available.	Detected in 10-15% of fish sampled in U.S. lakes and reservoirs (Stahl et al., 2009). Detected in surface waters in Washington and lower Columbia River using passive samplers (SPMDs) (Sandvik, 2009).
608-93-5	Pentachlorobenzene PBT score: 5	Chemical intermediate. Used to make PCNB, a fungicide. Current and historical uses as a fire retardant (USEPA Fact Sheet).	Enters the environment when PCNB is used. Current and historical uses of PCNB may have left residues of pentachlorobenzene in soils and sediment which continue to leach into the environment.	U.S. total annual releases: ≈360 kg (2008 TRI). Oregon total annual releases: 0 kg (2008 TRI). Magnitude: Low	Detected in biosolids nationally at low levels (Harrison et al., 2006).	Detected in fish tissue from the Willamette River (Henny et al., 2003).	Not detected in fish sampled in U.S. lakes and reservoirs (Stahl et al., 2009).
82-68-8	Pentachloronitrobenzene (PCNB)	Current-use fungicide. Used as a soil fungicide on lawns and ornamental	Current and historical agricultural uses may have left residues which may be released to surface water as a	Stored in 43 locations within Oregon. Maximum average storage as liquid 1,000-4,999 gallons; maximum storage as	Not detected in WWTP effluent discharged into the Columbia River (USGS, 2009).	No data available.	Detected in 5-10% of fish sampled in U.S. lakes and reservoirs (Stahl et al., 2009).

PESTICIDES

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)			
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)	
		crops, as a seed treatment of field crops and vegetables (e.g., barley, corn, cotton, oats, rice, and wheat), and as a slime inhibitor in industrial waters. Many of these uses were voluntarily cancelled in 2009.	result of agricultural runoff or soil/land disturbance.	liquid 1,000-4,999 gallons. Maximum average storage as solid 1,000-4,999 pounds; maximum storage as solid 5,000-9,999 pounds (Oregon State Fire Marshall 2009). Magnitude: High				
67747-09-5	Prochloraz	Current-use fungicide. No evidence of its registration in the U.S.; no products registered in the U.S. (NPIRS, USEPA Pesticide Reregistration Database).	Current agricultural uses may have left residues which may be released to surface water as a result of agricultural runoff or soil/land disturbance.	No data available. Magnitude: Insufficient info	No data available.	No data available.	None.	PESTICIDES
95-95-4	Trichlorophenol, 2,4,5-	Used as a bactericide and fungicide. Primary use is as an intermediate in the production of herbicides (ATSDR, 1999). A primary microbial degradation product of the herbicide 2,4,5-T.	Principal point sources include industrial waste discharge; leaching from landfills; volatilization to the atmosphere. Primary nonpoint source is application of pesticides that are made from chlorophenols and the chlorination of waste water containing phenol.	Imports to the U.S. in 1980 were 216,000 kg (ATSDR, 1999). U.S. total annual releases: ≈44 kg (2008 TRI). Oregon total annual releases: 0 kg (2008 TRI). Magnitude: Low	No data available.	No data available.	Not detected in fish sampled in U.S. lakes and reservoirs (Stahl et al., 2009).	
88-06-2	Trichlorophenol, 2,4,6-	Used primarily in various pesticide formulations and as a wood preservative. Also used as a fungicide, glue preservative, insecticide, bactericide, and as an anti-mildew agent for textiles. Also used as an intermediate in the production of higher chlorinated phenols (e.g.,	Principal point sources include industrial waste discharge; leaching from landfills; volatilization to the atmosphere. Primary nonpoint source is application of pesticides that are made from chlorophenols and the chlorination of waste water containing phenol.	No longer produced in the U.S. Imports to the U.S. between 1976 and 1980 were 250-1000 kg (ROC, 2005). U.S. total annual releases: ≈98 kg (2008 TRI). Oregon total annual releases: 0 kg (2008 TRI).	No data available.	No data available.	None. Detected in human urine at 2.42 ug/L (CDC, 2009).	

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)			
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)	
		PCP) (ATSDR, 1999). Most uses in the U.S. have been cancelled; but as of 2001 it continued to be used in the synthesis of some fungicides.		Magnitude: Low				
1582-09-8	Trifluralin	Current-use herbicide. Used to control annual grasses and some broadleaf annual weeds on a variety of crops, shrubs, and flowers. It is used mostly on cotton, as well as on soybeans and some fruits and vegetables.	May be released in fugitive emissions* during its production and in wastewater effluent. Also released during its application as a pesticide and may be released to surface water as a result of agricultural runoff. [*Air pollutants released to the air other than those from stacks or vents; typically small releases from leaks in plant equipment such as valves, pump seals, flanges, sampling connections, etc.]	U.S. total annual releases: ≈4,300 kg (2008 TRI). Oregon total annual releases: 0 kg (2008 TRI). #53 (≈20,000 kg/y) among the top 100 active ingredients used in Oregon in 2007 (ODA PURS 2007). Stored in 81 locations within Oregon. Maximum average storage as liquid 500-999 gallons; maximum storage as liquid 1,000-4,999 gallons. Maximum average storage as solid 10,000-49,999 pounds; maximum storage as solid 50,000-99,999 pounds (Oregon State Fire Marshall 2009). Magnitude: Med	Not detected in WWTP effluent discharged into the Columbia River (USGS, 2009).	Detected in surface water and/or sediment (USGS, 2007). Detected in surface waters (DEQ PSP, 2010). Detected in 6% of water samples in Willamette River Basin (USGS, 1997).	Detected in 5-10% of fish sampled in U.S. lakes and reservoirs (Stahl et al., 2009). Selected by U.S. EPA for Tier 1 screening as an endocrine disruptor (EDSP).	PESTICIDES
CONSUMER-RELATED CHEMICALS								
57-88-5	Cholesterol	None. Biogenic sterol.	Cholesterol is commonly abundant in aquatic environments and is produced by a wide range of organisms (zoo-, phytoplankton, fish or mammals). Primary anthropogenic source is WWTP effluent.	No data available but natural contributions may be significant. Magnitude: Insufficient info, presumed med	Detected in WWTP effluent discharged into the Columbia River (USGS, 2009). Detected in 100% of influent samples and 67% of effluent samples at 9 U.S. POTWs (USEPA, 2009a).	Detected in surface water (Barnes et al., 2002). Detected in fish tissue from Willamette River Basin (DEQ TMP, 2010).	Detected in streams nationally (Kolpin, et al., 2002)	CONSUMER-RELATED CHEMICALS
360-68-	Coprostanol	None. Fecal sterol.	Coprostanol (5β-cholestan-3β-ol) is abundantly (60%)	No data available.	Detected in WWTP effluent discharged into the Columbia	Detected in surface water and/or sediment (USGS,	Detected in streams nationally	

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)			
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)	
9			found in human feces (Brown and Wade, 1984; Rosenfeld and Hellman, 1971). Primary source is WWTP effluent.	Magnitude: Insufficient info, presumed Med	River (USGS, 2009). Detected in 100% of influent samples and 89% of effluent samples at 9 U.S. POTWs (USEPA, 2009a).	2007). Detected in fish tissue from Willamette River Basin (DEQ TMP, 2010)	(Kolpin, et al., 2002). Evidence of endocrine disruption in freshwater mussels (Gagne, et al. 2001).	
541-02-6	Cyclopentasiloxane, decamethyl- [D5]	Most important use is in blending and formulating consumer products. Used mainly as a raw material or intermediate in the production of silicone polymers. Used in Oregon as Green Earth™ drycleaning fluid.	Released to the environment in a dispersive manner due to its widespread use. Releases are mainly to air, due to its high volatility, and water (via effluents from wastewater treatment systems) during consumer product use, but can also be released during use in industrial processes. When discharged to wastewater collection and treatment systems, some will partition to the residual sludge produced from the treatment processes.	No readily available data for U.S. In 2006, Canada imported between 1 and 10 million kg. Stored in 9 locations within Oregon. Maximum average storage as liquid 200-499 gallons; maximum storage as liquid 200-499 gallons (Oregon State Fire Marshall 2009). Magnitude: Med	Reported in effluent at low µg/L levels and in biosolids at high µg/kg levels (NIAR, 2007).	Detected in surface water by U.S. EPA Columbia River “Nose” Survey (2008).	None.	CONSUMER-RELATED CHEMICALS

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)			
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)	
556-67-2	Cyclotetrasiloxane, octamethyl- [D4] PBT score: 3	Used mainly as a raw material or intermediate in the production of silicone polymers and copolymers. Silicone polymers are used in the production of personal care products for hair and skin care, antiperspirants and deodorants; pharmaceuticals; processing aids such as defoamers, surfactants (in certain pesticide products), leveling agents (in paint, lacquers and varnishes) and mould release agents; lubricants; cleaners; sealants; architectural coatings; mechanical, heat transfer and dielectric fluids; plastic products and films; polishes and coatings on a range of substrates including textiles, carpeting and paper; and reprography.	Released to the environment in a dispersive manner due to its widespread use. Releases are mainly to air, due to its high volatility, and water (via effluents from wastewater treatment systems) during consumer product use, but can also be released during use in industrial processes. When discharged to wastewater collection and treatment systems, some will partition to the residual sludge produced from the treatment processes.	No readily available data for U.S. In 2006, Canada imported between 1 and 10 million kg. Magnitude: Med	Reported in effluent at low µg/L levels and in biosolids at high µg/kg levels (NIAR, 2007).	Detected in surface water by U.S. EPA Columbia River “Nose” Survey (2008).	None.	CONSUMER-RELATED CHEMICALS
56-53-1	Diethylstilbestrol PBT score: 3	Synthetic estrogen. Last produced and marketed in the U.S. in 1997. Currently imported for use only in clinical trials and to treat urinary incontinence in spayed female dogs and cats (ROC, 2005).	Releases from medical facilities or patient residences. Runoff of feces or urine from dogs or cats undergoing treatment.	No longer manufactured by pharmaceutical companies in the United States. Annual U.S. imports ranged from ≈3,000 to 7,800 kg in the 1970s, but had dropped to 130 kg by 1982. In 2003, 13 U.S. suppliers of diethylstilbestrol were identified (ROC, 2005). Magnitude: Low	Reported in WWTP effluent in China (Jin et al., 2008).	No data available.	Not detected in fish sampled in U.S. lakes and reservoirs (Stahl et al., 2009).	

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)			
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)	
1222-05-5	Galaxolide [HHCb] PBT score: 5	Polycyclic musk (fragrance) Commonly used in laundry detergents to mask the smell of the detergent chemicals. It is also used to give washed laundry the "clean scent" that consumers prefer.	Waste water from indoor consumer and domestic uses of products containing this chemical is discharged into rivers and lakes through treated wastewater or to land through application of sewage sludge.	High production volume chemical, >454,000 kg/y. Production in EU reported at 1-5 million kg/y, largely for export. About 1.5 million kg are used within the EU. Magnitude: High	Detected in WWTP effluent discharged into the Columbia River (USGS, 2009). Detected in effluent and sludge (Harrison et al., 2006; Rimkus et al., 1999; Zeng et al., 2005; Rickling et al., 2003). Detected in WWTP influent (Stephenson and Oppenheimer, 2007).	Detected in surface water and/or sediment (USGS, 2007).	Detected in 97% of fish sampled by the national pilot study (Ramirez et al., 2009).	CONSUMER-RELATED CHEMICALS
70-30-4	Hexachlorophene PBT score: 4	Antimicrobial. Used as a surgical scrub and as a bacteriostatic skin cleanser in germicidal soaps (e.g., for acne). Used to control an outbreak of gram-positive infection when other procedures have been unsuccessful. Now available in the U.S. only by prescription.	Releases from medical facilities or patient residences. Waste water from indoor consumer and domestic uses of products containing this chemical is discharged into rivers and lakes through treated wastewater or to land through application of sewage sludge. Extensive production and use, particularly in germicidal soap, over the past several decades indicates that widespread human exposure occurs in both general and working environments; confirmed by its presence in human body fluids.	No data available. Magnitude: Insufficient info, presumed low	Once prevalent in effluent, now detected infrequently (Heidler and Halden, 2009).	No data available.	TCDD (dioxin) is an unwanted by-product formed during the hexachlorophene production.	
15323-35-0	Musk indane [Phantolide]	Polycyclic musk (fragrance). First invented in 1951, it performs better in detergents and washing powders and has become the new lead structure for musk odorants. Used in cosmetics, perfumes, air fresheners, cleaning products,	Waste water from indoor consumer and domestic uses of products containing this chemical is discharged into rivers and lakes through treated wastewater or to land through application of sewage sludge.	No data available.	Detected in biosolids nationally (Harrison et al., 2006; Zeng et al., 2005; Rickling et al., 2003).	No data available.	None.	

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)			
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)	
		detergents, soap, and many other everyday products with artificial scents. Not as commonly used as other musks.		Magnitude: Insufficient info, presumed med				
81-14-1	Musk ketone PBT score: 3	Nitromusk (fragrance). First developed in 1894, it was among the most used perfumery ingredients until the mid-1960s (Fortineau, 2004). Used in the U.S. primarily in cosmetics. Use has decreased drastically due to voluntary changes made by companies manufacturing personal care and consumer products.	Waste water from indoor consumer and domestic uses of products containing this chemical is discharged into rivers and lakes through treated wastewater or to land through application of sewage sludge.	No data available. Magnitude: Insufficient info, presumed low	Detected in biosolids nationally (Harrison et al., 2006). Detected in WWTP influent (Stephenson and Oppenheimer, 2007)	No data available.	Not detected in fish sampled by the national pilot study (Ramirez et al., 2009).	CONSUMER-RELATED CHEMICALS
145-39-1	Musk tibetene PBT score: 3	Nitromusk (fragrance). Not widely used in the U.S. Banned in Europe for use in cosmetics.	Waste water from indoor consumer and domestic uses of products containing this chemical is discharged into rivers and lakes through treated wastewater or to land through application of sewage sludge.	No data available. Magnitude: Insufficient info, presumed low	Not reported in STP effluent (Osemwengie and Gersetnberger, 2004).	No data available.	None.	
81-15-2	Musk xylene PBT score: 4	Nitromusk (fragrance). Used in the U.S. primarily in detergents, fabric softeners, and soaps. Mandatory or voluntary bans in effect throughout much of Europe.	Waste water from indoor consumer and domestic uses of products containing this chemical is discharged into rivers and lakes through treated wastewater or to land through application of sewage sludge.	The EU imported an estimate 25,000 kg, primarily from China, in 2008. Magnitude: Insufficient info, presumed low	Detected in biosolids nationally (Harrison et al., 2006).	No data available.	Not detected in fish sampled by the national pilot study (Ramirez et al., 2009).	

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)			
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)	
2062-78-4	Pimozide PBT score: 4	Anti-psychotic drug. Used to control motor or verbal tics caused by Tourette's disorder. Also used to treat schizophrenia and certain behavior, personality, movement, and psychiatric disorders in adults.	May be released via treated and untreated sewage effluent by consumer or patient disposal, wastage from external application, excretion, washing, or swimming). Municipal/domestic sewage, more so than hospital sewage, is the major source for most (but not all) drugs classes (USEPA).	No data available. Magnitude: Insufficient info, presumed low	No data available.	No data available.	None.	CONSUMER-RELATED CHEMICALS
80214-83-1	Roxithromycin PBT score: 3	Antibiotic.	May be released via treated and untreated sewage effluent by consumer or patient disposal, wastage from external application, excretion, washing, or swimming). Municipal/domestic sewage, more so than hospital sewage, is the major source for most (but not all) drugs classes (USEPA). May be released to terrestrial runoff from confined animal feeding operations (CAFOs), excreta from medicated pets, and by wind-borne drift of agriculturally applied antimicrobials to crops.	No data available. Magnitude: Insufficient info, presumed low	Reported in effluent (Choi et al., 2008; Miao et al., 2004). Detected during national sewage sludge survey (USEPA, 2009b).	No data available	Detected in streams nationally (Kolpin, et al., 2002)	
83-45-4	Sitostanol PBT score: 4	Phytostanol. Occur naturally in plants. Added to food as a source of phytosterols and phytosterols. May be used for certain	May be released via treated and untreated sewage effluent by consumer disposal or excretion of plant food items or food items augmented with phytosterols or phytosterols.	No data available. Magnitude: Insufficient info, presumed med	Detected in 100% of influent samples and 40% of effluent samples at 9 U.S. POTWs (USEPA, 2009a). Detected during national sewage sludge survey (USEPA, 2009b).	Present in sediment (Billig and Gould, 2007).	Detected in streams nationally (stigmastanol) (Kolpin, et al., 2002).	

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)			
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)	
		medical conditions.						
83-46-5	Sitosterol PBT score: 4	Phytosterol. Occur naturally in plants. Added to food as a source of phytosterols and phytostanols. May be used for certain medical conditions.	Industrial effluent from pulp and paper production. May be released via treated and untreated sewage effluent by consumer disposal or excretion of plant food items or food items augmented with phytosterols or phytostanols.	No data available. Magnitude: Insufficient info, presumed med	Detected in 100% of influent samples and 44% of effluent samples at 9 U.S. POTWs (USEPA, 2009a). Detected in WWTP effluent discharged into the Columbia River (USGS, 2009). Detected in biosolids nationally (Harrison et al., 2006).	Present in sediment (Billig and Gould, 2007).	None.	
92-94-4	Terphenyl, p- PBT score: 4	Used as a laser dye and a sunscreen lotion component.	No data available.	No data available. Magnitude: Insufficient info, presumed low	Detected as a class in biosolids (Harrison et al., 2006).	No data available.	None.	CONSUMER-RELATED CHEMICALS
3380-34-5	Triclosan [2,4,4'-trichloro-2'-hydroxydiphenyl ether]	Antibacterial. Used as a broad-spectrum antibacterial agent on commercial, institutional, and industrial, residential, and public access premises. Used as a material preservative in many products including adhesives, fabrics, vinyl, plastics, polyethylene, polyurethane, polypropylene, floor wax emulsions, textiles, caulking compounds, sealants, rubber, carpets, toys, mattresses, clothing, brooms, mulch, floors, shower curtains, awnings, tents, toilet bowls, urinals, garbage cans, refuse container liners, insulation, concrete mixtures, grouts, and	Industrial releases when triclosan is incorporated into plastic and textile items during production. Release into household wastewater and surface waters from the antimicrobial uses.	Stored in 2 locations within Oregon. Maximum average storage as liquid 50-199 gallons; maximum storage as liquid 200-499 gallons. Maximum average storage as solid 50-199 pounds; maximum storage as solid 50-199 pounds (Oregon State Fire Marshall 2009).	Detected in 100% of influent samples and 0% of effluent samples at 9 U.S. POTWs (USEPA, 2009a). Detected in WWTP effluent discharged into the Columbia River (USGS, 2009). Reported in municipal WWTP effluent and biosolids (Kolpin et al., 2002; Heidler and Halden, 2009; Orvos et al., 2002; Coogan et al., 2007). Detected in WWTP influent (Stephenson and Oppenheimer, 2007).	Detected in surface water (Barnes et al., 2002).	Not detected in fish sampled by the national pilot study (Ramirez et al., 2009). Detected in human urine at 13.0 ug/L (CDC, 2009) and the blood of marine mammals (Fair, et al., 2009). Detected in streams nationally (Kolpin, et al., 2002).	

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)			
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)	
	PBT score: 5	upholstery fabrics. Minor use as a registered pesticide.		Magnitude: Insufficient info, presumed high				
HALOGENATED FLAME RETARDANTS								
25637-99-4	Hexabromocyclodecane [HBCD]	Brominated flame retardant. Primary use is in extruded and expanded polystyrene foam used as thermal insulation by the building and construction industry. Other uses include upholstered furniture, automobile interior textiles, car cushions and insulation blocks in trucks, packaging material, and electric and electronic equipment housings.	Releases during transport and manufacturing. Leaching from in-use or discarded products. Releases from combustion (e.g., residential fires) or incineration of in-use or discarded products.	Total worldwide market demand in 2001 was 16.7 million kg. Demand in the Americas in 2001 was 2.8 million kg (Morose, 2006). Magnitude: High	Shown to be present in influent but majority removed with sludge (Morris et al., 2004; USEPA, 2004). Estimated 94% removal from effluent (to biosolids) during treatment.	No data available.	Potential endocrine effects (van der Ven, et al., 2009). Includes CASRN 3194-55-6.	HALOGENATED FLAME RETARDANTS
5436-43-1	PBDE-047 [2,2',4,4'-Tetrabromodiphenyl ether]	Used as additive flame retardants in thermoplastics (ATSDR, 2004).	Additive flame retardants are physically combined with the polymer material being treated rather than chemically combined (as in reactive flame retardants). This means that there is a possibility that they may diffuse out of the treated material to some extent. Leaching from in-use or discarded products. Releases from combustion (e.g., residential fires) or incineration of in-use or discarded products.	In 2001, the total market demand for PBDEs in the Americas was 33.1 million kg (ATSDR, 2004). Magnitude: High	Detected in 100% of influent samples and 89% of effluent samples at 9 U.S. POTWs (USEPA, 2009a). Detected in WWTP effluent discharged into the Columbia River (USGS, 2009). Detected in both effluent and sludge (USEPA, 2009b; North, 2004). Detected in sewage sludge (Öberg et al., 2002).	Detected in osprey eggs from the Willamette River (Henny, <i>personal communication</i>). Detected in surface water (Willamette basin) using passive samplers (SPMD) (DEQ, 2008). Detected in fish tissue from Willamette River Basin (DEQ TMP, 2010).	Detected in human blood serum at 20.5 ng/g; lipid adjusted (CDC, 2009). Detected in surface waters in Washington and lower Columbia River using passive samplers (SPMDs) (Sandvik, 2009).	
60348-60-9	PBDE-099 [2,2',4,4',5-Pentabromodiphenyl]	Used as additive flame retardants in	See PBDE-047.	In 2001, the total market demand for pentaPBDEs in	Detected in 100% of influent samples and 89% of effluent	Detected in osprey eggs from the Willamette River (Henny,	Detected in human blood serum at 42.2 ng/g; lipid adjusted	

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)			
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)	
	ether] PBT score: 6	thermoplastics. The commercial pentaBDE product is used predominantly (95–98%) for flame retardant purposes as an additive in consumer products manufactured by the furniture industry (ATSDR, 2004).		the Americas was 7.1 million kg (ATSDR, 2004). Magnitude: High	samples at 9 U.S. POTWs (USEPA, 2009a). Detected in WWTP effluent discharged into the Columbia River (USGS, 2009). Detected in both effluent and sludge (USEPA, 2009b; North, 2004). Detected in sewage sludge (Öberg et al., 2002).	<i>personal communication</i>). Detected in fish tissue from Willamette River Basin (DEQ TMP, 2010).	(CDC, 2009). Detected in surface waters in Washington and lower Columbia River using passive samplers (SPMDs) (Sandvik, 2009).	
189084-64-8	PBDE-100 [2,2',4,4',6-Pentabromodiphenyl ether] PBT score: 6	Used as additive flame retardants in thermoplastics. The commercial pentaBDE product is used predominantly (95–98%) for flame retardant purposes as an additive in consumer products manufactured by the furniture industry (ATSDR, 2004).	See PBDE-047.	In 2001, the total market demand for pentaPBDEs in the Americas was 7.1 million kg (ATSDR, 2004). Magnitude: High	Detected in 100% of influent samples and 78% of effluent samples at 9 U.S. POTWs (USEPA, 2009a). Detected in WWTP effluent discharged into the Columbia River (USGS, 2009). Detected in both effluent and sludge (North, 2004). Detected in sewage sludge (Öberg et al., 2002).	Detected in osprey eggs from the Willamette River (Henny, <i>personal communication</i>). Detected in fish tissue from Willamette River Basin (DEQ TMP, 2010).	Detected in human blood serum at 3.93 ng/g; lipid adjusted (CDC, 2009). Detected in surface waters in Washington and lower Columbia River using passive samplers (SPMDs) (Sandvik, 2009).	HALOGENATED FLAME RETARDANTS
68631-49-2	PBDE-153 [2,2',4,4',5,5'-hexabromodiphenyl ether] PBT score: 6	Used as additive flame retardants in thermoplastics.	See PBDE-047.	In 2001, the total market demand for PBDEs in the Americas was 33.1 million kg (ATSDR, 2004). Magnitude: High	Detected in 100% of influent samples and 67% of effluent samples at 9 U.S. POTWs (USEPA, 2009a). Detected in WWTP effluent discharged into the Columbia River (USGS, 2009). Detected in both effluent and sludge (USEPA, 2009b; North, 2004). Detected in sewage sludge (Öberg et al., 2002).	Detected in fish tissue from Willamette River Basin (DEQ TMP, 2010).	Detected in human blood serum at 5.69 ng/g; lipid adjusted (CDC, 2009). Detected in surface waters in Washington using passive samplers (SPMDs) (Sandvik, 2009).	
1163-19-5	PBDE-209 [decabromodiphenyl ether]	Used as additive flame retardants in thermoplastics. Used at loadings of 10–15% weight in polymers	See PBDE-047.	In 2001, the total market demand for decaPBDEs in the Americas was 24.5 million kg (ATSDR, 2004).	Detected in 100% of influent samples and 33% of effluent samples at 9 U.S. POTWs (USEPA, 2009a). Detected in both effluent and	No data available.	None	

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)			
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)	
	PBT score: 4	and is always used in conjunction with antimony trioxide. Its major use is in high impact polystyrene, which is used in the television industry for cabinet backs.		Magnitude: High	sludge (USEPA, 2009b; North, 2004). Detected in sewage sludge (Öberg et al., 2002).			
79-94-7	Tetrabromobisphenol A [TBBPA] PBT score: 4	A brominated flame retardant. Most commonly used as a reactive flame retardant in epoxy resins for printed wiring boards. Also used as an additive flame retardant for other polymer applications (Morose, 2006).	Releases during transport and manufacturing. Emissions of uncreative fraction from in-use products. Leaching from in-use or discarded products. Releases from combustion (e.g., residential fires) or incineration of in-use or discarded products.	Total worldwide market demand in 2001 was 119.7 million kg. Demand in the Americas in 2001 was 18 million kg (Morose, 2006). U.S. total annual releases: ≈925,000 kg (2008 TRI). Oregon total annual releases: 0 kg (2008 TRI). Magnitude: High	Detected in sewage sludge (Öberg et al., 2002). Estimated 93% removal from effluent (to biosolids) during treatment.	No data available.	Not detected in fish sampled in U.S. lakes and reservoirs (Stahl et al., 2009).	HALOGENATED FLAME RETARDANTS
PERFLUORINATED SURFACTANTS								
375-85-9	Perfluoroheptanoic acid [PFHpA] PBT score: 3	Perfluoroalkyl carboxylic acid.	Use as surface protectants is expected to result in the release of these substances to the air.	No data available. Magnitude: Insufficient info, presumed low	Reported in municipal WWTP effluent and biosolids (Murakami et al., 2008).	No data available.	None.	PERFLUORINATED SURFACTANTS
375-95-1	Perfluorononanoic acid [PFNA] PBT score: 5	Perfluoroalkyl carboxylic acid.	Use as surface protectants is expected to result in the release of these substances to the air.	No data available. Magnitude: Insufficient info, presumed low	Reported in municipal WWTP effluent and biosolids (Konwick et al., 2008; D'eon et al., 2009; Lau et al., 2007; Murakami et al., 2009).	No data available.	Detected in human blood serum at 0.966 ug/L (CDC, 2009).	
754-91-6	Perfluorooctane sulfonamide [PFOSA] PBT score: 5	Perfluoroalkyl sulfonamide.	Use as surface protectants is expected to result in the release of these substances to the air.	No data available. Magnitude: Insufficient info, presumed low	Reported in municipal WWTP effluent and biosolids (Konwick et al., 2008; Murakami et al., 2008).	No data available.	Detected in human blood serum at 0.300 ug/L (CDC, 2009).	
1763-23-1	Perfluorooctane sulfonic acid [PFOS]	Perfluoroalkyl sulphonic acid. Used in surface protection	Use as surface protectants is expected to result in the release of these substances to	Annual production volume in 2002: 6,800 - 227,000 kg (ATSDR, 2009).	Reported in municipal WWTP effluent and biosolids (Becker et al., 2008; Konwick et al., 2008; D'eon et al., 2009; Lau	No data available.	Detected in osprey eggs (Goodale, 2009). Detected in human blood serum	

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)			
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)	
	PBT score: 5	products such as carpet and clothing treatments and coatings for paper and cardboard packaging; firefighting foams.	the air. Former use in aqueous fire-fighting foams has resulted in the release of these substances to soil and groundwater. Releases have occurred at production facilities.	Production phased-out in 2002. Magnitude: High	et al., 2007; Murakami et al., 2008).		at 20.7 ug/L (CDC, 2009).	
335-67-1	Perfluorooctanoic acid [PFOA] PBT score: 4	Perfluoroalkyl carboxylic acid. Used in surface protection products such as carpet and clothing treatments and coatings for paper and cardboard packaging; firefighting foams.	Use as surface protectants is expected to result in the release of these substances to the air. Former use in aqueous fire-fighting foams has resulted in the release of these substances to soil and groundwater. Releases have occurred at production facilities.	Annual production volume in 2002: 6,800 - 227,000 kg (ATSDR, 2009). Production currently being phased-out. Magnitude: High	Reported in municipal WWTP effluent and biosolids (Becker et al., 2008; Konwick et al., 2008; D'eon et al., 2009; Lau et al., 2007; Murakami et al., 2008).	No data available.	Detected in human blood serum at 3.95 ug/L (CDC, 2009).	PERFLUORINATED SURFACTANTS
POLYCHLORINATED NAPHTHALENES								
32241-08-0	Heptachloronaphthalene PBT score: 6	Legacy pollutant. Lower chlorinated PCN mixtures used predominately as lubricants; higher chlorinated mixtures used for capacitor impregnation and electrical insulation. Also used as flame retardants, as rubber and plastics additives, fungicides, sealants, and textile finishes (Falandysz, 1998).	Diffuse losses from old equipment or products containing PCNs; diffuse losses of PCNs present as contaminants in PCB formulations; historical losses and discharges from chlor-alkali production; ongoing and periodic illegal sale and use of PCN stockpiles; ongoing formation and release of PCNs as unintentional by-products of high temperature industrial processes including incineration. Likely a global atmospheric pollutant (Harner et al., 1998).	Until the 1970s, PCNs were high-volume chemicals. Global production of PCN formulations (1910-1960): ≈50-150 million kg (Falandysz, 1998). U.S. production ceased in 1980. Globally, PCNs are still produced and used in very small quantities. Magnitude: Very low	Detected in sewage sludge from urban WWTP in China (Li et al., 2008).	No data available.	None.	POLYCHLORINATED NAPHTHALENES

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)			
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)	
1335-87-1	Hexachloronaphthalene PBT score: 6	Legacy pollutant. Lower chlorinated PCN mixtures used predominately as lubricants; higher chlorinated mixtures used for capacitor impregnation and electrical insulation. Also used as flame retardants, as rubber and plastics additives, fungicides, sealants, and textile finishes (Falandysz, 1998).	Diffuse losses from old equipment or products containing PCNs; diffuse losses of PCNs present as contaminants in PCB formulations; historical losses and discharges from chlor-alkali production; ongoing and periodic illegal sale and use of PCN stockpiles; ongoing formation and release of PCNs as unintentional by-products of high temperature industrial processes including incineration. Likely a global atmospheric pollutant (Harner et al., 1998).	Until the 1970s, PCNs were high-volume chemicals. Global production of PCN formulations (1910-1960): ≈50-150 million kg (Falandysz, 1998). U.S. production ceased in 1980. Globally, PCNs are still produced and used in very small quantities. Magnitude: Very low	Detected in sewage sludge from urban WWTP in China (Li et al., 2008). Detected in biosolids nationally (Harrison et al., 2006).	No data available.	None.	
1321-64-8	Pentachloronaphthalene PBT score: 6	Legacy pollutant. Lower chlorinated PCN mixtures used predominately as lubricants; higher chlorinated mixtures used for capacitor impregnation and electrical insulation. Also used as flame retardants, as rubber and plastics additives, fungicides, sealants, and textile finishes (Falandysz, 1998).	Diffuse losses from old equipment or products containing PCNs; diffuse losses of PCNs present as contaminants in PCB formulations; historical losses and discharges from chlor-alkali production; ongoing and periodic illegal sale and use of PCN stockpiles; ongoing formation and release of PCNs as unintentional by-products of high temperature industrial processes including incineration. Likely a global atmospheric pollutant (Harner et al., 1998).	Until the 1970s, PCNs were high-volume chemicals. Global production of PCN formulations (1910-1960): ≈50-150 million kg (Falandysz, 1998). U.S. production ceased in 1980. Globally, PCNs are still produced and used in very small quantities. Magnitude: Very low	Detected in sewage sludge from urban WWTP in China (Li et al., 2007).	No data available.	None.	POLYCHLORINATED NAPHTHALENES

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)		
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)
1335-88-2	Tetrachloronaphthalene PBT score: 4	Legacy pollutant. Lower chlorinated PCN mixtures used predominately as lubricants; higher chlorinated mixtures used for capacitor impregnation and electrical insulation. Also used as flame retardants, as rubber and plastics additives, fungicides, sealants, and textile finishes (Falandysz, 1998).	Diffuse losses from old equipment or products containing PCNs; diffuse losses of PCNs present as contaminants in PCB formulations; historical losses and discharges from chlor-alkali production; ongoing and periodic illegal sale and use of PCN stockpiles; ongoing formation and release of PCNs as unintentional by-products of high temperature industrial processes including incineration. Likely a global atmospheric pollutant (Harner et al., 1998).	Until the 1970s, PCNs were high-volume chemicals. Global production of PCN formulations (1910-1960): ≈50-150 million kg (Falandysz, 1998). U.S. production ceased in 1980. Globally, PCNs are still produced and used in very small quantities. Magnitude: Very low	Detected in sewage sludge from urban WWTP in China (Li et al., 2007).	No data available.	None.
1321-65-9	Trichloronaphthalene PBT score: 3	Legacy pollutant. Lower chlorinated PCN mixtures used predominately as lubricants; higher chlorinated mixtures used for capacitor impregnation and electrical insulation. Also used as flame retardants, as rubber and plastics additives, fungicides, sealants, and textile finishes (Falandysz, 1998).	Diffuse losses from old equipment or products containing PCNs; diffuse losses of PCNs present as contaminants in PCB formulations; historical losses and discharges from chlor-alkali production; ongoing and periodic illegal sale and use of PCN stockpiles; ongoing formation and release of PCNs as unintentional by-products of high temperature industrial processes including incineration. Likely a global atmospheric pollutant (Harner et al., 1998).	Until the 1970s, PCNs were high-volume chemicals. Global production of PCN formulations (1910-1960): ≈50-150 million kg (Falandysz, 1998). U.S. production ceased in 1980. Globally, PCNs are still produced and used in very small quantities. Magnitude: Very low	Detected in sewage sludge from urban WWTP in China (Li et al., 2007).	No data available.	None.

POLYCHLORINATED NAPHTHALENES

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)			
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)	
POLYCHLORINATED BIPHENYLS (PCBs)								
7012-37-5 MCL	PCB-028 [2,4,4'-trichlorobiphenyl] PBT score: 4	Between 1979 and 1998, the production and use of PCBs in the U.S. was generally banned (ATSDR, 2000b). The use of PCB-containing materials and equipment still in service (primarily electrical transformers and capacitors) was allowed to continue but with restrictions (ATSDR, 2000b).	Diffuse losses from current equipment or products containing PCBs; Diffuse losses from old equipment or products containing PCBs; historical losses and discharges from equipment or products containing PCBs; ongoing and periodic illegal sale and use of PCB stockpiles; release of PCBs as unintentional by-products of high temperature industrial processes including incineration. PCBs are known global atmospheric pollutants (Harner et al., 1998).	No data available for this specific PCB congener. PCBs were produced commercially in the U.S. from 1929 until 1977; annual U.S. production peaked in 1970 at 39 million kg of Aroclors. U.S. total annual releases (total PCBs): ≈1.8 million kg (2008 TRI). Oregon total annual releases (total PCBs): ≈12,000 kg (2008 TRI). Magnitude: Low	No data available.	Detected in fish tissue from Willamette River Basin (DEQ TMP, 2010) Detected in sediment in Oregon (DEQ LASAR).	Detected in human blood serum at 4.90 ng/g; lipid adjusted (CDC, 2009).	POLYCHLORINATED BIPHENYLS (PCBs)
35693-99-3 MCL	PCB-052 [2,2',5,5'-tetrachlorobiphenyl] PBT score: 6	See PCB-028.	See PCB-028.	See PCB-028. Magnitude: Low	Not detected in WWTP effluent discharged into the Columbia River (USGS, 2009).	Detected in surface water (Willamette basin) using passive samplers (SPMD) (DEQ, 2008) Detected in fish tissue from Willamette River Basin (DEQ TMP, 2010). Detected in sediment in Oregon (DEQ LASAR).	Detected in human blood serum at 2.66 ng/g; lipid adjusted (CDC, 2009).	

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)			
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)	
32598-13-3 MCL	PCB-077 [3,3',4,4'-tetrachlorobiphenyl] PBT score: 5	See PCB-028.	See PCB-028.	See PCB-028. Magnitude: Low	No data available.	Detected in fish tissue from the Willamette River (Henny et al., 2003, 2008b). Detected in osprey eggs from the Columbia River (Henny et al., 2008a). Detected in soils in the Willamette Valley (USEPA, 2007). Detected in fish tissue from Willamette River Basin (DEQ TMP, 2010). Detected in sediment in Oregon (DEQ LASAR).	None.	POLYCHLORINATED BIPHENYLS (PCBs)
70362-50-4 MCL	PCB-081 [3,4,4',5'-tetrachlorobiphenyl] PBT score: 6	See PCB-028.	See PCB-028.	See PCB-028. Magnitude: Low	No data available.	Detected in fish tissue from the Willamette River (Henny et al., 2003, 2008b). Detected in osprey eggs from the Columbia River (Henny et al., 2008a).	Detected in human blood serum at 13.4 pg/g; lipid adjusted (CDC, 2009).	
37680-73-2 MCL	PCB-101 [2,2',4,5,5'-pentachlorobiphenyl] PBT score: 6	See PCB-028.	See PCB-028.	See PCB-028. Magnitude: Low	Not detected in WWTP effluent discharged into the Columbia River (USGS, 2009).	Detected in fish tissue from Willamette River Basin (DEQ TMP, 2010). Detected in sediment in Oregon (DEQ LASAR).	Detected in human blood serum at 1.65 ng/g; lipid adjusted (CDC, 2009).	
32598-14-4 MCL	PCB-105 [2,3,3',4,4'-pentachlorobiphenyl] PBT score: 6	See PCB-028.	See PCB-028.	See PCB-028. Magnitude: Low	No data available.	Detected in fish tissue from the Willamette River (Henny et al., 2003, 2008b). Detected in osprey eggs from the Columbia River (Henny et al., 2008a). Detected in fish tissue from Willamette River Basin (DEQ TMP, 2010)	Detected in human blood serum at 1.20 ng/g; lipid adjusted (CDC, 2009).	

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)			
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)	
74472-37-0 MCL	PCB-114 [2,3,4,4',5-pentachlorobiphenyl] PBT score: 6	See PCB-028.	See PCB-028.	See PCB-028. Magnitude: Low	No data available.	Detected in fish tissue from Willamette River Basin (DEQ TMP, 2010).	None.	POLYCHLORINATED BIPHENYLS (PCBs)
31508-00-6 MCL	PCB-118 [2,3',4,4',5-pentachlorobiphenyl] PBT score: 6	See PCB-028.	See PCB-028.	See PCB-028. Magnitude: Low	Not detected in WWTP effluent discharged into the Columbia River (USGS, 2009).	Detected in fish tissue from the Willamette River (Henny et al., 2003, 2008b). Detected in osprey eggs from the Columbia River (Henny et al., 2008a). Detected in soils in the Willamette Valley (USEPA, 2007). Detected in fish tissue from Willamette River Basin (DEQ TMP, 2010).	Detected in human blood serum at 6.00 ng/g; lipid adjusted (CDC, 2009).	
65510-44-3 MCL	PCB-123 [2',3,4,4',5-pentachlorobiphenyl] PBT score: 6	See PCB-028.	See PCB-028.	See PCB-028. Magnitude: Low	No data available.	Detected in fish tissue from Willamette River Basin (DEQ TMP, 2010).	None.	
57465-28-8 MCL	PCB-126 [3,3',4,4',5-pentachlorobiphenyl] PBT score: 6	See PCB-028.	See PCB-028.	See PCB-028. Magnitude: Low	No data available.	Detected in fish tissue from the Willamette River (Henny et al., 2003, 2008b). Detected in osprey eggs from the Columbia River (Henny et al., 2008a). Detected in soils in the Willamette Valley (USEPA, 2007).	Detected in human blood serum at 16.3 pg/g; lipid adjusted (CDC, 2009).	
35065-28-2 MCL	PCB-138 [2,2',3,4,4',5'-hexachlorobiphenyl] PBT score: 6	See PCB-028.	See PCB-028.	See PCB-028. Magnitude: Low	Not detected in WWTP effluent discharged into the Columbia River (USGS, 2009).	Detected in fish tissue from the Willamette River (Henny et al., 2003, 2008b). Detected in osprey eggs from the Columbia River (Henny et al., 2008a). Detected in fish tissue from Willamette River Basin	Detected in human blood serum at 15.1 ng/g; lipid adjusted (CDC, 2009).	

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)			
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)	
						(DEQ TMP, 2010).		
35065-27-1 MCL	PCB-153 [2,2',4,4',5,5'-hexachlorobiphenyl] PBT score: 5	See PCB-028.	See PCB-028.	See PCB-028. Magnitude: Low	No data available.	Detected in fish tissue from the Willamette River (Henny et al., 2003, 2008b). Detected in osprey eggs from the Columbia River (Henny et al., 2008a). Detected in soils in the Willamette Valley (USEPA, 2007). Detected in fish tissue from Willamette River Basin (DEQ TMP, 2010). Detected in surface water (Willamette basin) using passive samplers (SPMD) (DEQ, 2008). Detected in sediment in Oregon (DEQ LASAR).	Detected in human blood serum at 19.8 ng/g; lipid adjusted (CDC, 2009).	POLYCHLORINATED BIPHENYLS (PCBs)
38380-08-4 MCL	PCB-156 [2,3,3',4,4',5-hexachlorobiphenyl] PBT score: 5	See PCB-028.	See PCB-028.	See PCB-028. Magnitude: Low	No data available.	Detected in soils in the Willamette Valley (USEPA, 2007). Detected in fish tissue from Willamette River Basin (DEQ TMP, 2010).	Detected in human blood serum at 2.54 ng/g; lipid adjusted (CDC, 2009).	
69782-90-7 MCL	PCB-157 [2,3,3',4,4',5'-hexachlorobiphenyl] PBT score: 5	See PCB-028.	See PCB-028.	See PCB-028. Magnitude: Low	No data available.	Detected in soils in the Willamette Valley (USEPA, 2007). Detected in fish tissue from Willamette River Basin (DEQ TMP, 2010).	Detected in human blood serum at 0.61 ng/g; lipid adjusted (CDC, 2009).	

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)			
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)	
52663-72-6 MCL	PCB-167 [2,3',4,4',5,5'-hexachlorobiphenyl] PBT score: 5	See PCB-028.	See PCB-028.	See PCB-028. Magnitude: Low	No data available.	Detected in soils in the Willamette Valley (USEPA, 2007). Detected in fish tissue from Willamette River Basin (DEQ TMP, 2010).	Detected in human blood serum at 0.49 ng/g; lipid adjusted (CDC, 2009).	POLYCHLORINATED BIPHENYLS (PCBs)
32774-16-6 MCL	PCB-169 [3,3',4,4',5,5'-hexachlorobiphenyl] PBT score: 6	See PCB-028.	See PCB-028.	See PCB-028. Magnitude: Low	No data available.	Detected in fish tissue from the Willamette River (Henny et al., 2003, 2008b). Detected in osprey eggs from the Columbia River (Henny et al., 2008a). Detected in soils in the Willamette Valley (USEPA, 2007). Detected in fish tissue from Willamette River Basin (DEQ TMP, 2010).	Detected in human blood serum at 17.9 pg/g; lipid adjusted (CDC, 2009).	
35065-29-3 MCL	PCB-180 [2,2',3,4,4',5,5'-heptachlorobiphenyl] PBT score: 5	See PCB-028.	See PCB-028.	See PCB-028. Magnitude: Low	Not detected in WWTP effluent discharged into the Columbia River (USGS, 2009).	Detected in fish tissue from the Willamette River (Henny et al., 2003, 2008b). Detected in osprey eggs from the Columbia River (Henny et al., 2008a). Detected in fish tissue from Willamette River Basin (DEQ TMP, 2010).	Detected in human blood serum at 15.1 ng/g; lipid adjusted (CDC, 2009).	
39635-31-9 MCL	PCB-189 [2,3,3',4,4',5,5'-heptachlorobiphenyl] PBT score: 5	See PCB-028.	See PCB-028.	See PCB-028. Magnitude: Low	No data available.	Detected in fish tissue from Willamette River Basin (DEQ TMP, 2010).	Detected in human blood serum at 1.47 ng/g; lipid adjusted (CDC, 2009).	

Attachment 4. Pollutant Profiles

Summary (4.1)				Relative Magnitude (4.2)	Presence (4.3)			
CASRN (1)	Pollutant (2)	Uses (3)	Sources & Pathways to the Environment (4)	Annual discharge (5)	Presence in WWTPs (6)	Presence in Oregon waters (7)	Other (8)	
DIOXINS / FURANS								
1746-01-6 MCL	Dioxins / furans (as 2,3,7,8-TCDD TEQ) PBT score: 6	None.	Ubiquitous pollutant formed by both natural and anthropogenic processes. Formed through combustion, chlorine bleaching and manufacturing processes (combination of heat and chlorine creates dioxin. Since chlorine is naturally occurring, natural activities such as volcanic activity and forest fires can lead to the formation of dioxins.	U.S. total annual releases : ≈33 kg (2008 TRI). Oregon total annual releases: ≈0.02 kg (2008 TRI). Magnitude: Low	Numerous reports of detection in pulp mill effluents and WWTP biosolids.	Detected in fish tissue from the Willamette River (Henny et al., 2003, 2008b). Detected in osprey eggs from the Columbia River (Henny et al., 2008a). Detected in fish tissue from Willamette River Basin (DEQ TMP, 2010). Dioxins detected in fish in Columbia River Basin, leading to development of a TMDL (DEQ, 2007a).	None.	DIOXINS / FURANS