Schedule 3 Hazardous Air Contaminants

The Otago Regional Council is particularly concerned about the effects of hazardous air contaminants on human health and the environment. As such, particular regard is to be given to avoiding the adverse effects of these contaminants when preparing or making decisions on resource consent applications in terms of Policy 8.2.2 of this Plan.

The table below lists the hazardous air contaminants described by the Ministry for the Environment in their publication *Ambient Air Quality Guidelines* (1994) as either being known or suspected to cause:

- Acute human health effects, cancer or teratogenic effects, or serious or irreversible effects, reproductive dysfunction, neurological disorders, heritable genetic mutations, or other chronic health effects; or
- Significant adverse effects on the environment due to their toxicity, persistence in the environment, tendency to bioaccumulate, or any combination of these.

The table also indicates those contaminants which the United States Environmental Protection Authority (1992) identify in their *Integrated Risk Information System* (IRIS) database either being a confirmed or suspected carcinogen. The classification system is described in the notes which follow the table.

Number	Contaminant	Carcinogenic Category
75-07-0	Acetaldehyde	B2
60-35-5	Acetamide	
75-05-8	Acetonitrile	
98-86-2	Acetophenone	D
53-96-3	2-Acetylaminofluorene	
107-02-8	Acrolein	C
79-06-1	Acrylamide	B2
79-10-7	Acrylic acid	
107-13-1	Acrylonitrile	B1
107-05-1	Allyl chloride	
92-67-1	4-Aminobiphenyl	
62-53-3	Aniline	B2
90-04-0	o-Anisidine	
1332-21-4	Asbestos	A
71-43-2	Benzene	A
92-87-5	Benzidine	A
98-07-7	Benzotrichloride	B2
100-44-7	Benzyl chloride	B2
92-52-4	Biphenyl	D
117-81-7	Bis(2-ethylhexyl)phthalate (DEHP)	B2
542-88-1	Bis(chloromethyl) ether	A
75-25-2	Bromoform	B2
106-99-0	1,3-Butadiene	B2
156-62-7	Calcium cyanamide	
105-60-2	Caprolactam	

Number	Contaminant	Carcinogenic Category
133-06-2	Captan	
63-25-2	Carbaryl	
75-15-0	Carbon disulfide	
56-23-5	Carbon tetrachloride	B2
463-58-1	Carbonyl sulfide	
120-80-9	Catechol	
133-90-4	Chloramben	
57-74-9	Chlordane	B2
7782-50-5	Chlorine	
79-11-8	Chloroacetic acid	
532-27-4	2-Chloroacetophenone	
108-90-7	Chlorobenzene	D
510-15-6	Chlorobenzilate	
67-66-3	Chloroform	B2
107-30-2	Chloromethyl methyl ether	A
126-99-8	Chloroprene	
1319-77-3	Cresol / cresylic acid (mixed isomers)	C
95-48-7	o-Cresol	C
108-39-4	m-Cresol	C
106-44-5	p-Cresol	C
98-82-8	Cumene	
	2,4-D (2,4-Dichlorophenoxyacetic acid) (including salts and esters)	
72-55-9	DDE (1,1-dichloro-2,2-bis (p-	B2

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Number	Contaminant	Carcinogenic Category
	chlorophenyl) ethylene)	
334-88-3	Diazomethane	
132-64-9	Dibenzofuran	D
96-12-8	1,2-Dibromo-3-chloropropane	
84-74-2	Dibutyl phthalate	D
106-46-7	1,4-Dichlorobenzene	
91-94-1	3,3[1]-Dichlorobenzidine	B2
111-44-4	Dichlorethyl ether (bis[2-chloroethyl]ether)	B2
542-75-6	1,3-Dichloropropene	
62-73-7	Dichlorvos	B2
111-42-2	Diethanolamine	
64-67-5	Diethyl sulfate	
119-90-5	3,3[1]-Dimethoxybenzidine	
60-11-7	4-Dimethylaminoazobenzene	
121-69-7	N,N-Dimethylaniline	
119-93-7	3,3[1]-Dimethylbenzidine	
79-44-7	Dimethylcarbomoyl chloride	
68-12-2	N,N-Dimethylformamide	
57-14-7	1,1-Dimethylhydrazine	
131-11-3	Dimethyl phthalate	D
77-78-1	Dimethyl sulfate 4,6-Dinitro-o-cresol (including salts)	B2
51-28-5	2,4-Dinitrophenol	
121-14-2	2,4-Dinitrotoluene	B2
123-91-1	1,4-Dioxane (1,4-Diethyleneoxide)	B2
122-66-7	1,2-Diphenylhydrazine	B2
106-89-8	Epichlorohydrin (1-Chloro-2,3-epoxypropane)	B2
106-88-7	1,2-Epoxybutane	
140-88-5	Ethyl acrylate	
100-41-4	Ethylbenzene	D
51-79-6	Ethyl carbamate (Urethane)	
75-00-3	Ethyl chloride (Chloroethane)	
106-93-4	Ethylene dibromide (Dibromoethane)	B2
107-06-2	Ethylene dichloride (1,2-Dichloroethane)	B2
107-21-1	Ethylene glycol	
151-56-4	Ethyleneimine (Aziridine)	
75-21-8	Ethylene oxide	
96-45-7	Ethylene thiourea	
75-34-3	Ethylidene dichloride (1,1	C

Number	Contaminant	Carcinogenic Category
	Dichloroethane)	
50-00-0	Formaldehyde	B1
76-44-8	Heptachlor	B2
118-74-1	Hexachlorobenzene	B2
87-68-3	Hexachlorobutadiene 1,2,3,4,5,6-Hexachlorocyclohexane (all stereo isomers, including lindane)	C
77-47-4	Hexachlorocyclopentadiene	D
67-72-1	Hexachloroethane	
822-06-0	Hexamethylene di-isocyanate	
680-31-9	Hexamethylphosphoramide	
110-54-3	Hexane	
302-01-2	Hydrazine	B2
7647-01-0	Hydrochloric acid (Hydrogen chloride [gas only])	
7664-39-3	Hydrogen fluoride (Hydrofluoric acid)	
123-31-9	Hydroquinone	
78-59-1	Isophorone	C
108-31-6	Maleic anhydride	
67-56-1	Methanol	
72-43-5	Methoxychlor	D
74-83-9	Methyl bromide (Bromomethane)	D
74-87-3	Methyl chloride (Chloromethane)	
71-55-6	Methyl chloroform (1,1,1-Trichloroethane)	D
78-93-3	Methyl ethyl ketone (2-Butanone)	D
60-34-4	Methylhydrazine	
74-88-4	Methyl iodide (Iodomethane)	
108-10-1	Methyl isobutyl ketone (Hexone)	
624-83-9	Methyl isocyanate	
80-62-6	Methyl methacrylate	
1634-04-4	Methyl tert-butyl ether	
101-14-4	4,4[1]-Methylenebis (2-chloroaniline)	
75-09-2	Methylene chloride (Dichloromethane)	
101-68-8	4,4[1]-Methylenediphenyl diisocyanate (MDI)	
101-77-9	4,4[1]-Methylenedianiline	
91-20-3	Naphthalene	D
98-95-3	Nitrobenzene	D

Number	Contaminant	Carcinogenic Category
92-93-5	4-Nitrobiphenyl	
100-02-7	4-Nitrophenol	
79-46-9	2-Nitropropane	
684-93-5	N-Nitroso-N-methylurea	
62-75-9	N-Nitrosodimethylamine	B2
59-89-2	N-Nitrosomorpholine	
56-38-2	Parathion	C
82-68-8	Pentachloronitrobenzene (Quintobenzene)	
87-86-5	Pentachlorophenol	B2
108-95-2	Phenol	D
106-50-3	p-Phenylenediamine	
75-44-5	Phosgene	
7803-51-2	Phosphine	D
7723-14-0	Phosphorus	D
85-44-9	Phthalic anhydride	
1336-36-3	Polychlorinated biphenyls (Aroclors)	B2
1120-71-4	1,3-Propane sultone	
57-57-8	beta-Propiolactone	
123-38-6	Propionaldehyde	
114-26-1	Propoxur (Baygon)	
78-87-5	Propylene dichloride (1,2-Dichloropropane)	
75-56-9	Propylene oxide	B2
75-55-8	1,2-Propylenimine (2-Methylaziridine)	
91-22-5	Quinoline	
106-51-4	Quinone (p-Benzoquinone)	
100-42-5	Styrene	
96-09-3	Styrene oxide	

Number	Contaminant	Carcinogenic Category
1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin	
79-34-5	1,1,2,2-Tetrachloroethane	
127-18-4	Tetrachloroethylene (Perchloroethylene)	
7550-45-0	Titanium tetrachloride	
108-88-3	Toluene	D
95-80-7	Toluene-2,4-diamine	
584-84-9	2,4-Toluene di-isocyanate	
95-53-4	o-Toluidine	
8001-35-2	Toxaphene (chlorinated camphene)	B2
120-82-1	1,2,4-Trichlorobenzene	D
79-00-5	1,1,2-Trichloroethane	C
79-01-6	Trichloroethylene	
95-95-4	2,4,5-Trichlorophenol	
88-06-2	2,4,6-Triclorophenol	B2
121-44-8	Triethylamine	
1582-09-8	Trifluralin	C
540-84-1	2,2,4-Trimethylpentane	
108-05-4	Vinyl acetate	
593-60-2	Vinyl bromide	
75-01-4	Vinyl chloride	
75-35-4	Vinylidene chloride (1,1-Dichloroethylene)	C
1330-20-7	Xylene (mixed isomers)	D
95-47-6	o-Xylene	
108-38-3	m-Xylene	
106-42-3	p-Xylene	

Number	Contaminant	Carcinogenic Category
	Antimony Compounds	
	Arsenic Compounds (inorganic including arsine)	A
	Beryllium Compounds	B2
	Cadmium Compounds	B1
	Chromium Compounds	A
	Cobalt Compounds	
	Coke Oven Emissions	A
	Cyanide Compounds[1]	
	Glycol ethers[2]	
	Lead Compounds	B2

Number	Contaminant	Carcinogenic Category
	Manganese Compounds	D
	Mercury Compounds	D
	Fine mineral fibres[3]	
	Nickel Compounds	A
	Polycyclic Organic Matter[4]	
	Radionuclides (including radon)[5]	A
	Selenium Compounds	B2

GENERAL NOTES:

1. The numbers referred to are the Chemical Abstracts Service Number. This service provides a source of additional information on the substance.
2. The classification system used by the United States Environmental Protection Agency in terms of confirmed or suspected carcinogens is as follows:

Carcinogenic Category	Explanation
A	Human carcinogen. Sufficient evidence to support causal association between contaminant and cancer.
B	Probable human carcinogen.
B1	Limited evidence for carcinogenity in humans.
B2	Sufficient evidence in animals but lacking adequate data on humans.
C	Possible human carcinogen. Limited evidence of carcinogenity in animals and an absence of data on humans.
D	Not classified. Evidence for carcinogenity in animals is inadequate.

TECHNICAL NOTES:

For all listings above which contain the word "Compounds" and for glycol ethers, the following applies: unless otherwise specified, these listings are defined as including any unique chemical substance that contains the named chemical (ie, antimony, arsenic, etc) as part of that chemical's infrastructure.

[1] X'CN where X' = H' or any other group where a formal dissociation may occur. For example, KCN or $Ca(CN)_2$.

[2] $R\text{-}(OCH_2CH_2)_n\text{-}OR'$ where:
n = 1, 2 or 3
R = alkyl C7 or less, or phenyl, or alkyl-substituted phenyl
R' = H, or alkyl C7 or less, or ester, sulphate, phosphate, nitrate or sulphonate.

[3] Includes mineral fibre emissions from facilities manufacturing or processing glass, rock, or slag fibres (or other mineral derived fibres) of an average diameter of 1 micrometer or less.

[4] Includes substituted and/or unsubstituted polycyclic aromatic hydrocarbons and aromatic heterocyclic compounds, with two or more fused rings, at least one of which is benzenoid (ie, containing six carbon atoms and is aromatic) in structure. Polycyclic Organic Matter is a mixture of organic compounds containing one or more of these polycyclic aromatic chemicals. Polycyclic Organic Matter is generally formed or emitted during thermal processes including:
(1) Incomplete combustion;
(2) Pyrolysis;
(3) The volatilisation, distillation or processing of fossil fuels or bitumens; or
(4) The distillation or thermal processing of non-fossil fuels.

[5] A type of atom which spontaneously undergoes radioactive decay.