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Emerging policy issues: environment in the multilateral system

Environmental law

Note by the Executive Director

Addendum

**Result of further consultations between Governments following the
intergovernmental meeting on the draft guidelines for the
development of domestic legislation on liability, response action and
compensation for damage caused by activities dangerous to the
environment**

Summary

Following the conclusion of the intergovernmental meeting organized in follow-up to section III of decision 25/11 to review and further develop the draft guidelines for the development of domestic legislation on liability, response action and compensation for damage caused by activities dangerous to the environment, held from 9 to 11 November 2009, Governments, through their representatives on the Committee of Permanent Representatives, were invited to continue consultations on the guidelines with a view to resolving issues outstanding after that meeting. The result of those consultations, in which participating Governments resolved the outstanding issues, is reflected in the draft guidelines set out in the annex to document UNEP/GCSS.XI/8/Add.1. As a result of comments made by some Governments, the commentary to the guidelines was also amended and may be found in the annex to the present note.

* UNEP/GCSS.XI/1.

Annex

Commentary to the guidelines for the development of domestic legislation on liability, response action and compensation for damage caused by activities dangerous to the environment¹

Commentary to guideline 1

The guidelines do not cover environmental degradation generally. Rather, they focus exclusively on damage caused by activities that are recognizably dangerous to the environment and are specifically identified as such by domestic law (see also commentary to guideline 3). Legislation and rules that States might consider adopting domestically in accordance with the guidelines should, therefore, be viewed as complementing, rather than repudiating, existing general domestic law of civil liability, or as *lex specialis* applicable – in limited fashion – within the confines of “activities dangerous to the environment”.

Commentary to guideline 2

The term “liability” is used here in comprehensive fashion and thus refers to both civil liability and administrative liability, if applicable, depending on the domestic legal system concerned.

Domestic law should incorporate some or all of these exclusions, it being understood that the reference in paragraph 2 (a) to “domestic laws establishing special liability regimes” encompasses any such treaty-based domestic rules and regulations.

Commentary to guideline 3

Conceptually, relevant domestic law will be concerned with damage caused by activities dangerous to the environment. In consequence, it should specifically define as such activities deemed dangerous to the environment, based on a combination of classification criteria or by drawing on the specific lists of hazardous substances, activities and installations (as set out in annexes I and II to the present commentary).

Further, domestic law should define damage as including also loss of life and personal injury, provided that they arise in connection with “environmental damage”.

Domestic legislation should ensure that “pure economic loss” linked to environmental damage, and the costs of restoring or reinstating the environment and of preventive measures, are made eligible for compensation. As a basic rule, measures of reinstatement should aim for on-site replacement of components of the environment damaged, unless their cost would be disproportionate to the damage sustained. In this regard, States could adopt flexible standards, based on contextually determined notions of reasonableness, by defining who is entitled to take measures, of what kind, and up to what level of environmental wholesomeness. Should reinstatement be physically impossible or its costs be unreasonable, the law should require offsetting measures such as the introduction of equivalent components into the environment, or the taking of off-site measures.

In addition, as regards environmental damage, domestic legislation might acknowledge such loss as being an intrinsic part of any approach to comprehensive legislation on liability, response action and compensation for environmental damage. Should domestic legislation incorporate such a comprehensive focus, domestic law might also put in place an appropriate mechanism for the assessment or valuation of compensation as a result of the loss of the use of the natural resources concerned.

As regards the factors determining the significance of environmental damage, the term “traditional cultural value” should be understood to include the use of the environment for religious purposes or purposes of worship. In defining the term “operator” the law should assure that the primarily responsible party is also the one in the best position to act towards minimizing the costs of environmental damage, i.e., the costs of prevention and of reinstatement and compensation. This includes any person or persons on whose behalf the activity is being carried out. Although the term

¹ The present commentary has been developed by the secretariat with the assistance of environmental legal experts and with input from various Governments. It does not represent a negotiated text.

“operator” includes any natural or legal, private or public person, domestic legislation might make this explicit.

Commentary to guideline 4

Domestic law should specify the operator’s and the competent public authority’s obligations and, conversely, rights to take action in response to environmental damages resulting from incidents arising during an activity dangerous to the environment. Specifically, the operator should be required to act as a first responder and whenever unsuccessful or unable to avert or minimize damage, to notify the authorities promptly. Conversely, the competent public authority should be entitled to obtain relevant information from the operator, require the operator to take action or take such action itself or through third parties if the requisite response action is likely not to be otherwise forthcoming, effective or timely.

Commentary to guideline 5

Domestic legislation should channel liability to the operator. Strict liability should be the standard applicable to damage caused by activities hazardous to the environment. The imposition of strict liability requires in turn that domestic laws and regulations spell out the limited circumstances in which such liability arises, i.e., carefully define the critical notion of “activity dangerous to the environment” by reference to annex I and II criteria or lists.

Persons other than the operator should be subject to liability based on fault if their wrongful or illegal conduct caused or contributed to damage caused by an activity dangerous to the environment.

Commentary to guideline 6

Domestic law should include a generic “act of God/force majeure” basis for exoneration. In general, that basis will be understood to include natural phenomena of an exceptional, inevitable and uncontrollable nature. Another basis for exemption could be armed conflict, hostilities, civil war, insurrections or terrorist attacks. In addition, domestic law should retain a traditional exemption from liability, namely for damage arising out of third parties’ conduct. The exoneration for third party conduct is narrow and should not include parties related to the operator, such as employees, agents or contractors. Domestic law should further recognize the degree of a claimant’s contributory fault in causing the damage as a basis for a corresponding reduction of the operator’s liability vis-à-vis that person. Exemptions from liability should also include compliance with compulsory measures imposed by public authorities. Lastly, domestic law might recognize self-reporting as a ground for mitigating damages owed to any governmental entity.

Commentary to guideline 7

To facilitate claimants’ recovery, multiple operators should be jointly and severally liable. States might wish to provide for the allocation of liability among multiple defendants on the basis of individual contributions (or some other nexus) to the damage sustained, with or without prejudice to the claimant’s position.

Commentary to guideline 8

While recognizing the primary importance of legal claims for personal injury and loss of property, domestic law may also recognize the compensability of environmental damage and provide a framework for its assessment and valuation. Domestic law may allow claims for compensation for environmental damage.

Commentary to guideline 9

Beyond enabling competent public authorities to take appropriate measures to respond to environmental damage, domestic mechanisms for compensating damage to the environment must strike a balance between the respective role of individuals and of community institutions in protecting, preserving and restoring the environment. To this end, domestic law should:

(a) Permit civil society and non-governmental organizations access to justice for the purpose of correcting any public authority’s failure to redress environmental damage;

(b) Grant any person the right to institute judicial proceedings against another person acting in contravention of provisions of environmental law without having to meet applicable standing requirements;

(c) Enable a claimant to obtain relevant information directly bearing on his or her claim for compensation from the operator or the public authority in possession of such information unless disclosure of such information is specifically prohibited by law or violates the legally protected interests of third parties. Conversely, domestic law should enable the operator to obtain correspondingly relevant information from the competent public authority.

A group of persons includes persons “affected or likely to be affected by damage caused by activities dangerous to the environment, or promoting environmental protection and meeting any requirements under domestic law”.

Commentary to guidelines 10 and 11

Given that the operator might be unable to meet his or her liability or that actual damages might exceed the operator’s limit of liability, States might wish to consider alternative compensation mechanisms, to closing potential compensation gaps by way of special funding or collective compensation mechanisms. These could include hybrid public-private, industry-wide or operator-wide funds or other supplementary funding.

An effective system of liability, response action and compensation depends on adequate financial arrangements, such as insurance (including self-insurance), letters of credit and bonds, being in place to cover compensable claims for damage. Accordingly, domestic law should encourage or require the operator to enter into and maintain appropriate financial arrangements commensurate with the operator’s potential liabilities. In addition, States might impose a requirement to this effect after undertaking a cost-benefit analysis to compare the costs of covering liabilities with the scale of benefits obtained. States may wish to consider providing that no limit on liability applies in circumstances where the damage occurs from intention or grossly negligent conduct, or in other circumstances deemed appropriate by the State.

When setting up any such financial arrangements States should pay special attention to their feasibility and effectiveness by cooperating closely with and taking into account the interests of all relevant stakeholders. In particular, it is recommended that States should consult the insurance sector on the availability or development of financial guarantees to cover liability under the guidelines.

Commentary to guideline 12

Domestic legislation should incorporate two tier-based time limits into their liability, response action and compensation legislation. Typically, domestic law provides that claims for compensation should be inadmissible, i.e., not being allowed, unless they are brought within five years from the date the claimant knew or ought to have known of the damage and the identity of the operator; and, in any case, should be barred unless they are brought within 10–30 years of the occurrence of the damage.

Commentary to guideline 13

In respect of claims for compensation, domestic legislation should incorporate the principle of *lex damni*, i.e., the law of the State where damage occurs or may occur, as the default rule. Additionally, domestic law might give favourable consideration to permitting the claimant to choose the law where the event giving rise to damage occurred as an alternative. Domestic legislation that provides for this alternative should leave the timing of the claimant’s choice of law to be determined by the law of the forum.

Commentary to guideline 14

Any domestic liability, response action and compensation regime will require the identification of activities as dangerous to the environment. International and domestic practice suggests that the listing of specific activities in the relevant liability instrument is the most appropriate method of classification, because it makes apparent the nature and scope of the risk of liability and thereby strengthens insurability of risk. It also may contribute to deterring damage-causing activities.

Activities could be listed either by category, installation type, property of substances involved, or a combination thereof. Any list of hazardous substances may be subject to possibly applicable thresholds regarding their hazard potential, such as the quantity of the substances involved. Any

classification lists should be viewed as providing exhaustive enumerations of activities dangerous to the environment, depending on national practice and policy preferences.

For this purpose domestic law might take into account the Globally Harmonized System of Classification and Labelling of Chemicals (GHS)² or might wish to follow and adapt, as necessary, existing classification schemes of relevant international legal instruments or laws and regulations of specific countries, illustrative samples of which are provided in annexes I and II.

GHS is a scheme mandated by the United Nations Conference on Environment and Development and administered by the United Nations Economic Commission for Europe. It establishes harmonized criteria for classifying substances and mixtures according to their health, environmental and physical hazards and is likely to prove an especially important guidance document for this purpose. It is already widely used internationally and implemented by States (67 countries, including many developing countries) domestically. Examples of other, specific classification lists – whether separate or combined – can be found in:

(a) 1993 Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment (“Lugano Convention”), annex I (dangerous substances) and annex II (installations or sites for the incineration, treatment, handling or recycling of waste);

(b) Organization for Economic Cooperation and Development: Decision of the Council on the Exchange of Information concerning Accidents Capable of Causing Transfrontier Damage, 8 July 1988 – C(88)84/Final, appendix III (threshold quantities of dangerous substances);

(c) 2003 Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes and to the 1992 Convention on the Transboundary Effects of Industrial Accidents, annex I (hazardous substances and their threshold quantities for the purpose of defining hazardous activities);

(d) European Union Directive 2004/35/CE of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage, annex III.

Any such domestic lists or classifications of hazardous substances, activities or installations should be kept up to date to reflect changes in the international classification schemes concerned, as new information or knowledge emerges.

Additionally, the laws and regulations of several countries, such as the United States of America Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. §9601 (14), the New Zealand Hazardous Activities and Industries List, the Indian Manufacture, Storage and Import of Hazardous Chemical (Amendment) Rules, 2000, or the Canadian regulations under the Environmental Protection Act, section 200, could provide guidance on how to classify relevantly substances, activities or installations as hazardous.

2 At http://www.unece.org/trans/danger/publi/ghs/ghs_rev02/02files_e.html.

Annexes

Annexes I and II draw on some international and domestic legal instruments and regulations to provide specific, non-exhaustive illustrations of hazardous substances and activities and installations deemed dangerous to the environment.

Annex I

Sample list of hazardous substances

A. List of hazard characteristics¹

A. Explosive: An explosive substance or waste is a solid or liquid substance or waste (or mixture of substances or wastes) that is in itself capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings.

B. Flammable liquids: The word “flammable” has the same meaning as “inflammable”. Flammable liquids are liquids, or mixtures of liquids, or liquids containing solids in solution or suspension (for example, paints, varnishes and lacquers, but not including substances or wastes otherwise classified on account of their dangerous characteristics), which give off a flammable vapour at temperatures of not more than 60.5° C, closed-cup test, or not more than 65.6° C, open-cup test. (Since the results of open-cup tests and of closed-cup tests are not strictly comparable and even individual results by the same test are often variable, regulations varying from the above figures to make allowance for such differences would be within the spirit of this definition).

C. Flammable solids: Solids, or waste solids, other than those classed as explosives, that under conditions encountered in transport are readily combustible, or may cause or contribute to fire through friction.

D. Substances or wastes liable to spontaneous combustion: Substances or wastes that are liable to spontaneous heating under normal conditions encountered in transport, or to heating up on contact with air, and being then liable to catch fire.

E. Substances or wastes that, in contact with water, emit flammable gases: Substances or wastes that, by interaction with water, are liable to become spontaneously flammable or to give off flammable gases in dangerous quantities.

F. Oxidizing: Substances or wastes that, while in themselves not necessarily combustible, may, generally by yielding oxygen cause, or contribute to, the combustion of other materials.

G. Organic peroxides: Organic substances or wastes that contain the bivalent-o-o-structure are thermally unstable substances that may undergo exothermic self-accelerating decomposition.

H. Poisonous (acute): Substances or wastes liable either to cause death or serious injury or to harm human health if swallowed or inhaled or by skin contact.

I. Infectious substances: Substances or wastes containing viable micro-organisms or their toxins that are known or suspected to cause disease in animals or humans.

J. Corrosives: Substances or wastes that, by chemical action, will cause severe damage when in contact with living tissue, or, in the case of leakage, will materially damage, or even destroy, other goods or the means of transport; they may also cause other hazards.

K. Liberation of toxic gases in contact with air or water: Substances or wastes that, by interaction with air or water, are liable to give off toxic gases in dangerous quantities.

L. Toxic (delayed or chronic): Substances or wastes that, if they are inhaled or ingested or if they penetrate the skin, may involve delayed or chronic effects, including carcinogenicity.

M. Ecotoxic: Substances or wastes that if released present or may present immediate or delayed adverse impacts to the environment by means of bioaccumulation or toxic effects upon biotic systems.

N. Flammable gases: Substances that in a gaseous state at normal pressure and mixed with air become flammable and the boiling point of which at normal pressure is 20° C or below.

O. Substances capable, by any means, after disposal, of yielding another material, e.g., leachate, which possess any of the characteristics listed above.

¹ Derived from the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal; 2003 Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes and to the 1992 Convention on the Transboundary Effects of Industrial Accidents.

B. Examples of hazardous substances²

CAS ³ number	Chemical name
93-76-5	2,4,5-T and its salts
75-07-0	Acetaldehyde
60-35-5	Acetamide
75-05-8	Acetonitrile
98-8622	Acetophenone
53-96-3	2-Acetylaminofluorene
107-02-8	Acrolein
79-06-1	Acrylamide
79-10-7	Acrylic acid
107-13-1	Acrylonitrile
77536-66-4	Actinolite
309-00-2	Aldrin
107-05-1	Allyl chloride
92-67-1	4-Aminobiphenyl
7790-98-9	Ammonium perchlorate
12172-73-5	Amosite
62-53-3	Aniline
90-04-0	o-Anisidine
77536-67-5	Anthophyllite
7440-38-2	Arsenic
1332-21-4	Asbestos
71-43-2	Benzene
92-87-5	Benzidine
50-32-8	Benzo(a)pyrene
98-07-7	Benzotrichloride
100-44-7	Benzyl chloride
57-57-8	beta-Propiolactone
485-31-4	Binapacryl
92-52-4	Biphenyl
117-81-7	Bis(2-ethylhexyl)phthalate (DEHP)
542-88-1	Bis(chloromethyl)ether
75-25-2	Bromoform
106-99-0	1,3-Butadiene
156-62-7	Calcium cyanamide
105-60-2	Caprolactam
2425-06-1	Captafol
133-06-2	Captan
63-25-2	Carbaryl
75-15-0	Carbon disulfide
630-08-0	Carbon monoxide
56-23-5	Carbon tetrachloride
463-58-1	Carbonyl sulfide
120-80-9	Catechol
133-90-4	Chloramben
57-74-9	Chlordane
7782-50-5	Chlorine
79-11-8	Chloroacetic acid
532-27-4	2-Chloroacetophenone
107-07-3	2-Chloroethanol
108-90-7	Chlorobenzene
510-15-6	Chlorobenzilate
6164-98-3	Chlorodimeform

2 Based on the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, annex III; the United States of America Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) hazardous air pollutants, 42 U.S.C. 7412 (2006); 2007 CERCLA Priority List of Hazardous Substances; and Canada's Environmental Protection Act (CEPA) Section 200 CRAIM list of regulated substances.

3 CAS (Chemical Abstracts Service) registry numbers are unique numerical identifiers for chemical elements, compounds, polymers, biological sequences, mixtures and alloys. CAS, a division of the American Chemical Society, assigns these identifiers with the intention to render database searches more convenient.

CAS ³ number	Chemical name
67-66-3	Chloroform
107-30-2	Chloromethyl methyl ether
76-06-2	Chloropicrin (trichloronitromethane)
126-99-8	Chloroprene
7790-94-5	Chlorosulfonic acid (chlorosulphonic acid)
1319-77-3	Cresols/Cresylic acid (isomers and mixture)
108-39-4	m-Cresol
95-48-7	o-Cresol
106-44-5	p-Cresol
12001-28-4	Crocidolite
98-82-8	Cumene
506-68-3	Cyanogen bromide
110-82-7	Cyclohexane
94-75-7	2,4-D, salts and esters
3547-04-4	DDE
50-29-3	DDT
334-88-3	Diazomethane
132-64-9	Dibenzofurans
96-12-8	1,2-Dibromo-3-chloropropane
106-93-4	1,2-dibromoethane (EDB)
84-74-2	Dibutylphthalate
111-44-4	Dichloroethyl ether (Bis(2-chloroethyl)ether)
107-06-2	1,2-Dichloroethane (ethylene dichloride)
62-73-7	Dichlorvos
106-46-7	1,4-Dichlorobenzene(p)
91-94-1	3,3-Dichlorobenzidene
107-06-2	1,2-Dichloroethane (ethylene dichloride)
542-75-6	1,3-Dichloropropene
60-57-1	Dieldrin
111-42-2	Diethanolamine
121-69-7	N,N-Diethyl aniline (N,N-Dimethylaniline)
64-67-5	Diethyl sulphate
119-90-4	3,3-Dimethoxybenzidine
60-11-7	Dimethyl aminoazobenzene
119-93-7	3,3'-Dimethyl benzidine
79-44-7	Dimethyl carbamoyl chloride
68-12-2	Dimethyl formamide
57-14-7	1,1-Dimethyl hydrazine
131-11-3	Dimethyl phthalate
77-78-1	Dimethyl sulphate
75-18-3	Dimethyl sulphide
534-52-1	4,6-Dinitro-o-cresol and salts
51-28-5	2,4-Dinitrophenol
121-14-2	2,4-Dinitrotoluene
88-85-7	Dinoseb and its salts and esters
123-91-1	1,4-Dioxane (1,4-Diethyleneoxide)
122-66-7	1,2-Diphenylhydrazine
17804-35-2 1563-66-2 137-26-8	Dustable powder formulations containing a combination of: benomyl at or above 7 per cent, carbofuran at or above 10 per cent, thiram at or above 15 per cent
106-89-8	Epichlorohydrin (1-Chloro-2 3-epoxypropane)
106-88-7	1,2-Epoxybutane
140-88-5	Ethyl acrylate
51-79-6	Ethyl carbamate (urethane)
75-00-3	Ethyl chloride (Chloroethane)
100-41-4	Ethylbenzene
106-93-4	Ethylene dibromide (Dibromoethane)
107-06-2	Ethylene dichloride (1,2-Dichloroethane)
107-21-1	Ethylene glycol
151-56-4	Ethylene imine (Aziridine)
75-21-8	Ethylene oxide
96-45-7	Ethylene thiourea
75-34-3	Ethylidene dichloride (1,1-Dichloroethane)
640-19-7	Fluoroacetamide

CAS ³ number	Chemical name
50-00-0	Formaldehyde
86290-81-5	Gasoline (motor fuel)
608-73-1	HCH (mixed isomers)
76-44-8	Heptachlor
118-74-1	Hexachlorobenzene
87-68-3	Hexachlorobutadiene
77-47-4	Hexachlorocyclopentadiene
67-72-1	Hexachloroethane
822-06-0	Hexamethylene-1,6-diisocyanate
680-31-9	Hexamethylphosphoramide
110-54-3	Hexane
302-01-2	Hydrazine
10035-10-6	Hydrobromic acid (hydrogen bromide)
7647-01-0	Hydrochloric acid
7664-39-3	Hydrogen fluoride (Hydrofluoric acid)
7722-84-1	Hydrogen peroxide (conc. 52% or greater)
123-31-9	Hydroquinone
78-59-1	Isophorone
463-51-4	Ketene
7439-92-1	Lead
58-89-9	Lindane (all isomers)
108-31-6	Maleic anhydride
7439-97-6	Mercury
78-85-3	Methacrolein (methacrylaldehyde)
30674-80-7	Methacryloyloxyethyl isocyanate
10265-92-6	Methamidophos (Soluble liquid formulations of the substance that exceed 600 g active ingredient/l)
67-56-1	Methanol
72-43-5	Methoxychlor
75-64-9	2-methyl-2-propanamine (tert-butylamine)
74-83-9	Methyl bromide (Bromomethane)
74-87-3	Methyl chloride (Chloromethane)
71-55-6	Methyl chloroform (1,1,1-Trichloroethane)
78-93-3	Methyl ethyl ketone (2-Butanone)
60-34-4	Methyl hydrazine
74-88-4	Methyl iodide
108-10-1	Methyl isobutyl ketone (Hexone)
624-83-9	Methyl isocyanate
80-62-6	Methyl methacrylate
1634-04-4	Methyl tert butyl ether
78-94-4	Methyl vinyl ketone
101-14-4	4,4-Methylene bis(2-chloroaniline)
75-09-2	Methylene chloride (Dichloromethane)
101-77-9	4,4'-Methylenedianiline
101-68-8	Methylene diphenyl diisocyanate (MDI)
298-00-0	Methyl-parathion (emulsifiable concentrates (EC) at or above 19.5% active ingredient and dusts at or above 1.5% active ingredient)
6923-22-4	Monocrotophos
8030-30-6	Naphtha
91-20-3	Naphthalene
8006-14-2	Natural gas
98-95-3	Nitrobenzene
92-93-3	4-Nitrobiphenyl
10102-44-0	Nitrogen dioxide
100-02-7	4-Nitrophenol
79-46-9	2-Nitropropane
62-75-9	N-Nitrosodimethylamine
59-89-2	N-Nitrosomorpholine
684-93-5	N-Nitroso-N-methylurea
20816-12-0	Osmium tetroxide
56-38-2	Parathion
82-68-8	Pentachloronitrobenzene (Quintobenzene)
87-86-5	Pentachlorophenol (and its salts and esters)

CAS ³ number	Chemical name
7616-94-6	Perchloryl fluoride (Trioxychlorofluoride)
108-95-2	Phenol
106-50-3	p-Phenylenediamine sulfate
75-44-5	Phosgene
13171-21-6 (mixture, (E)&(Z) isomers) 23783-98-4 ((Z)-isomer) 297-99-4 ((E)-isomer))	Phosphamidon (Soluble liquid formulations of the substance that exceed 1000 g active ingredient/l)
7803-51-2	Phosphine
7723-14-0	Phosphorus
85-44-9	Phthalic anhydride
36355-01-8 (hexa-) 27858-07-7 (octa-) 13654-09-6 (deca-)	Polybrominated biphenyls (PBB)
1336-36-3	Polychlorinated biphenyls (Aroclors)(PCB)
61788-33-8	Polychlorinated terphenyls (PCT)
130498-29-2	Polycyclic aromatic hydrocarbons
1120-71-4	1,3-Propane sultone
123-38-6	Propionaldehyde
114-26-1	Propoxur (Baygon)
75-55-8	1,2-Propylenimine (2-Methyl aziridine)
78-87-5	Propylene dichloride (1,2-Dichloropropane)
75-56-9	Propylene oxide
91-22-5	Quinoline
106-51-4	Quinone
7775-09-9	Sodium chlorate
7803-52-3	Stibine
100-42-5	Styrene
96-09-3	Styrene oxide
1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin
79-34-5	1,1,2,2-Tetrachloroethane
127-18-4	Tetrachloroethylene (Perchloroethylene)
78-00-2	Tetraethyl lead
75-74-1	Tetramethyl lead
7719-09-7	Thionyl chloride
7550-45-0	Titanium tetrachloride
108-88-3	Toluene
95-80-7	2,4-Toluene diamine
584-84-9	2,4-Toluene diisocyanate
95-53-4	o-Toluidine
8001-35-2	Toxaphene (chlorinated camphene)
77536-68-6	Tremolite
4342-36-3	Tributyltin benzoate
1461-22-9	Tributyltin chloride
1983-10-4	Tributyltin fluoride
24124-25-2	Tributyltin linoleate
2155-70-6	Tributyltin methacrylate
85409-17-2	Tributyltin naphthenate
56-35-9	Tributyltin oxide
120-82-1	1,2,4-Trichlorobenzene
79-00-5	1,1,2-Trichloroethane
79-01-6	Trichloroethylene
95-95-4	2,4,5-Trichlorophenol
88-06-2	2,4,6-Trichlorophenol
121-44-8	Triethylamine
1582-09-8	Trifluralin
540-84-1	2,2,4-Trimethylpentane
126-72-7	Tris (2,3-dibromopropyl) phosphate
108-05-4	Vinyl acetate
593-60-2	Vinyl bromide
75-01-4	Vinyl chloride
75-35-4	Vinylidene chloride (1,1-Dichloroethylene)
108-38-3	m-Xylenes
95-47-6	o-Xylenes

CAS ³ number	Chemical name
106-42-3	p-Xylenes
1330-20-7	Xylenes (isomers and mixers)
0	Antimony compounds
0	Arsenic compounds (inorganic including arsine)
0	Beryllium compounds
0	Cadmium compounds
0	Chromium compounds
0	Cobalt compounds
0	Coke oven emissions
0	Cyanide compounds
0	Glycol ethers
0	Lead compounds
0	Manganese compounds
0	Mercury compounds
0	Fine mineral fibres
0	Nickel compounds
0	Polycyclic organic matter
0	Radionuclides (including radon)
0	Selenium compounds
0	Tributyltin compounds

Annex II

Sample list of activities and installations dangerous to the environment

A. Examples of hazardous installations¹

1. Installations or sites for the partial or complete disposal of solid, liquid or gaseous wastes by incineration on land or at sea.
2. Installations or sites for thermal degradation of solid, gaseous or liquid wastes under reduced oxygen supply.
3. Installations or sites for high temperature degradation or thermal degasification of solid, gaseous or liquid wastes.
4. Installations or sites for thermal recovery of compounds from solid or liquid wastes.
5. Installations or sites for chemical, physical or biological treatment of wastes for recycling or disposal.
6. Installations or sites for blending or mix prior to submission to the operation of a site for permanent deposit.
7. Installations or sites for repacking prior to submission to the operation of a site for permanent deposit.
8. Installations or sites for handling and treatment of solid, liquid or gaseous wastes for reuse or recycling such as:
 - Solvent reclamation or regeneration;
 - Recycling or reclamation of organic substances (not used as solvents) and inorganic materials;
 - Regeneration of acid and bases;
 - Recovery of components used for pollution abatement;
 - Recovery of components from catalysts;
 - Waste oil re-refining or other reuses of waste oil;
 - Recovery of components from discarded cars.
9. Installations or sites for storage of materials intended for submission to any operation in the present annex or to the operation of a site for the permanent deposit of waste, temporary storage excluded, pending collection, on the site where it is produced.
10. Crude oil refineries (excluding undertakings manufacturing only lubricants from crude oil) and installations for the gasification and liquefaction of 500 tons or more of coal or bituminous shale per day.
11. Thermal power stations and other combustion installations with a heat output of 300 megawatts or more and nuclear power stations and other nuclear reactors (except research installations for the production and conversion of fissionable and fertile materials, whose maximum power does not exceed 1 kilowatt continuous thermal load).

¹ Based on the 1993 Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment (“Lugano Convention”), annex II (installations or sites for incineration, treatment, handling or recycling waste); Convention on Environmental Impact Assessment in a Transboundary Context of 25 February 1991 (“Espoo”), appendix I; and European Union Directive 2004/35/CE of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage, annex III.

12. Installations solely designed for the production or enrichment of nuclear fuels, for the reprocessing of irradiated nuclear fuels or for the storage, disposal and processing of radioactive waste.
13. Major installations for the initial smelting of cast iron and steel and for the production of non-ferrous metals.
14. Installations for the extraction of asbestos and for the processing and transformation of asbestos and products containing asbestos: for asbestos-cement products, with an annual production of more than 20,000 tons finished product; for friction material, with an annual production of more than 50 tons finished product; and for other asbestos utilization of more than 200 tons per year.
15. Integrated chemical installations.
16. Construction of motorways, express roads */ and lines for long-distance railway traffic and of airports with a basic runway length of 2,100 metres or more.
17. Large-diameter oil and gas pipelines.
18. Trading ports and also inland waterways and ports for inland-waterway traffic that permit the passage of vessels of over 1,350 tons.
19. Waste-disposal installations for the incineration, chemical treatment or landfill of toxic and dangerous wastes.
20. Large dams and reservoirs.
21. Groundwater abstraction activities in cases where the annual volume of water to be abstracted amounts to 10 million cubic metres or more.
22. Pulp and paper manufacturing of 200 air-dried tons or more per day.
23. Major mining, on-site extraction and processing of metal ores or coal.
24. Offshore hydrocarbon production.
25. Major storage facilities for petroleum, petrochemical and chemical products.
26. Deforestation of large areas.
27. Transport by road, rail, inland waterways, sea or air of dangerous or polluting goods.
28. Any contained use, including transport, involving genetically modified micro-organisms.
29. All discharges of hazardous substances into groundwater and inland surface water.
30. Any deliberate release into the environment, transport and placing on the market of genetically modified organisms.

B. Activities typically deemed hazardous²

Activity or industry	Hazardous substances involved
1. Abrasive blasting: carrying out abrasive blast cleaning (other than cleaning carried out in fully enclosed booths) or disposing of abrasive blasting material.	Dependent on material being removed, heavy metals, iron.
2. Acid/alkali plant, formulation and bulk storage.	Mercury, sulphuric, hydrochloric and nitric acids, sodium and calcium hydroxide.
3. Agrichemical spray contractor's premises used for filling and washing out tanks for commercial agrichemical application.	Arsenic, lead, copper, organochlorine pesticides, organophosphate pesticides, herbicides, fungicides, carbamates and synthetic pyrethroids.
4. Airports: fuel storage, workshops, washdown areas, stormwater run-off from hardstanding.	Hydrocarbons, metals.
5. Analysts: commercial analytical laboratory sites.	Solvents, acids, mercury.
6. Asbestos products production and disposal. Also sites with buildings containing asbestos products known to be in a deteriorated condition.	Asbestos.
7. Asphalt or bitumen manufacture or bulk storage: manufacturing asphalt or bitumen, or bulk storage of these products, other than at a single-use site used by a mobile asphalt plant.	Petroleum hydrocarbons, polycyclic aromatic hydrocarbons.
8. Battery manufacture or recycling: assembling, disassembling, manufacturing or recycling batteries (other than storing batteries for retail sale).	Heavy metals (lead, mercury, zinc, cadmium, nickel, antimony, silver, manganese), sulphuric acid.
9. Brake lining manufacturers, repairers and recyclers.	Asbestos, copper.
10. Cement or lime manufacturing: manufacturing cement or lime from limestone material using a kiln and storing wastes from the manufacturing process.	Lime, calcium hydroxide, alkalis.
11. Cemeteries.	Nitrates, lead, formaldehyde, biological hazards.
12. Chemical manufacture and formulation and bulk storage such that land use consent is required.	Wide range of organic and inorganic compounds.
13. Coal and coke yards.	Polycyclic aromatic hydrocarbons.
14. Concrete manufacture and bulk cement storage.	Cement, calcium hydroxide, alkalis.

² Derived from the New Zealand Hazardous Activities and Industries List (HAIL) with Hazardous Substances, February 2004.

Activity or industry	Hazardous substances involved
15. Defence works and defence establishments, including ordinance storage and training areas where live firing is carried out.	Explosives, lead, copper, antimony (firing ranges), solvents and metals (workshops), hydrocarbon storage.
16. Drum and tank reconditioning or recycling.	Wide range of chemicals from drums.
17. Dry cleaning plants: restricted to premises where dry cleaning is carried out and solvents are stored.	Trichloroethylene, 1,1,1-trichloroethane, perchloroethylene, carbon tetrachloride, volatile organic compounds.
18. Electrical transformers: manufacturing, repairing or disposing of electrical transformers or other heavy electrical equipment.	Polychlorinated biphenyls, hydrocarbons, copper, tin, lead, mercury.
19. Electronics: manufacturing, reconditioning.	Metals (e.g., copper, tin, lead), solvents.
20. Engine reconditioning: use of solvents and degreasers.	Solvents, hydrocarbons, heavy metals.
21. Explosive production or bulk storage.	Acetone, nitric and sulphuric acid, ammonium nitrate, fuel oil, polycaprolactone nitroglycerine, lead, mercury, copper, aluminium, silver, sodium hydroxide, explosives.
22. Fertilizer manufacture: manufacturing or bulk storage of agriculture fertilizer.	Calcium phosphate, calcium sulphate, copper chloride, sulphur, sulphuric acid, molybdenum, selenium, boron, cadmium, nitrates, ammonia.
23. Foundry operations: commercial production of metal products by injecting or pouring molten metal into moulds and associated activities.	Metals, particularly (iron, aluminium, lead, zinc, copper, tin, nickel, chromium and oxides, chlorides, fluorides and sulphates of these. Acids, coke, fuel oil.
24. Gasworks: manufacture of town gas from coal or oil feedstocks.	Polycyclic aromatic hydrocarbons, phenolics, benzene, toluene, ethylbenzene and xylenes, metals (particularly arsenic, lead, copper, chromium), cyanide compounds, sulphides and sulphates, thiocyanates ammonia, nitrates, coke.
25. Gun, pistol or rifle ranges.	Metals: lead, antimony, copper, zinc, tin, nickel.
26. Ironworks and steelworks.	Benzene, toluene, ethylbenzene and xylenes, phenolics, polycyclic aromatic hydrocarbons, metals and oxides of iron, nickel, copper, chromium, magnesium and manganese.

Activity or industry	Hazardous substances involved
27. Landfill sites.	Dependent on original waste composition, hydrocarbons, benzene, toluene, ethylbenzene and xylenes, polycyclic aromatic hydrocarbons, metals, organic acids, landfill gas, ammonia.
28. Livestock dip or spray race operations.	Arsenic, organochlorines and organophosphates, carbamates and synthetic pyrethroids.
29. Market gardens, orchards, glasshouses or other areas where the use of persistent agricultural chemicals occurred.	Arsenic, lead, copper, mercury, organochlorines and organophosphates, carbamates and synthetic pyrethroids.
30. Metal treatment or coating: including polishing, anodizing, galvanizing, pickling, electroplating, heat treatment using cyanide compounds and finishing. Curing works or commercially finishing leather.	Metals (zinc, aluminium, cadmium, chromium, lead, copper, tin), acids (sulphuric, nitric, hydrochloric, phosphoric), sodium hydroxide, solvents and degreasers, cyanide.
31. Mining and extractive industries and mineral processing: including chemically or physically extracting metalliferous ores, exposure of faces or release of groundwater containing hazardous contaminants and storing hazardous wastes, including waste dumps and tailings dams, but not gravel extraction.	Arsenic, mercury, cyanides, sulphides, metals – also workshop activities, fuel storage.
32. Motor vehicle workshops.	Hydrocarbons, polycyclic aromatic hydrocarbons, solvents, metals.
33. Paint manufacture and formulation.	Solvents, resins, heavy metals.
34. Pest control: commercially operating premises (or former pest destruction board, now regional council sites) where storage and preparation of pesticide occurs, including preparation of poisoned baits and filling or washing of tanks.	Arsenic, cyanide, strychnine, mercury, phosphorus, 1080, organochlorines and organophosphates, carbamates and synthetic pyrethroids.
35. Pesticide manufacture (including animal poisons, insecticides, fungicides and herbicides) commercially manufacturing, blending, mixing or formulating pesticides.	Wide range of insecticides, herbicides and fungicides, including arsenic, lead, mercury, copper, tin, chromium, organochlorines, organonitrogens, organophosphates, acid herbicides, dioxin, carbamates.
36. Petroleum or petrochemical industries or storage, including oil production and operating a petroleum depot, terminal, blending plant or refinery, retail or commercial refuelling facility, and facilities for recovery, reprocessing or recycling petroleum-based materials and bulk storage above and below ground.	Hydrocarbons, including benzene, toluene, ethylbenzene, and xylenes, polycyclic aromatic hydrocarbons, solvents, lead.
37. Pharmaceutical manufacture: commercially manufacturing, blending, mixing or formulating pharmaceuticals, including animal remedies.	Solvents.

Activity or industry	Hazardous substances involved
38. Port activities: including dry docks and ship and boat maintenance facilities.	Metals, paint residues (tin, lead), fuel storage.
39. Power stations and switchyards	Polychlorinated biphenyls, asbestos, metals (in fly ash), water treatment chemicals (thermal stations).
40. Printing: commercial printing, using metal type, inks and dyes, or solvents.	Solvents, acids, alkalis, heavy metals.
41. Railway yards: operating a railway yard including goods-handling yards, workshops, refuelling facilities and maintenance areas.	Hydrocarbons, heavy metals, solvents, creosote.
42. Sawmills: use of antisapstain chemicals during milling.	Antisapstain fungicides, pentachlorophenol, hydrocarbons.
43. Scrapyards: operating a scrapyards including automotive dismantling or wrecking yard or scrap metal yard.	Metals, hydrocarbons, solvents.
44. Service stations.	Hydrocarbons, lead, copper.
45. Smelting or refining: fusing or melting metalliferous ores or refining the metal.	Metals and oxides, fluorides and chlorides thereof.
46. Tannery, fellmongery or hide curing: operating a tannery or fellmongery or hide curing works or commercially finishing leather.	Chromium, manganese, copper, ammonia, sulphides, acids, sodium hydroxide, lime, formaldehyde, solvents, cyanide.
47. Transport depots.	Dependent on products being transported, hydrocarbons, metals and solvents in workshops.
48. Storage tanks and drum storage for fuel, chemicals and liquid waste.	Wide range of chemicals, biological hazards.
49. Waste storage, treatment and disposal, including land disposal of wastes, but not the use of biosolids as soil conditioners.	Depends on type of waste: biological hazards (bacteria, viruses), metals, polycyclic aromatic hydrocarbons, semi-volatile organic compounds, solvents.
50. Wood treatment and preservation and bulk storage of treated timber.	Pentachlorophenol, copper, arsenic, chromium, boron organo-tin, polycyclic aromatic hydrocarbons and phenolics (creosote), organochlorine pesticides.
51. Wool, hide and skin merchants (e.g., drying, scouring).	Detergents, pesticides, bleaching agents (e.g., hydrogen peroxide).
52. Any site that has been, or could be, subject to the migration of hazardous substances from hazardous substances present in soil or water on adjacent sites.	Dependent on contaminants associated with adjacent property.
53. Any other facility or activity that stores, uses or disposes of hazardous substances in sufficient quantity that intentional or accidental discharge of the substance could be a risk to human health or the environment.	