DEPARTMENT OF
ECOLOGY
State of Washington

Methods to Update the List of Toxic Air Pollutants

Chapter 173-460 WAC

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Publication and Contact Information

This document is available on Ecology's rulemaking web page at:
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Olympia, Washington

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History

For over 25 years, Chapter 173-460 WAC – Controls for New Sources of Toxic Air Pollutants – has required industrial and commercial businesses to limit their new emissions of toxic air pollutants to protect people who live, work, or go to school nearby. We have updated this rule twice since its original adoption in 1991.

When we last revised WAC 173-460-150 in 2009, we specified how we would update the list of toxic air pollutants. We will use the same process as we evaluate the list during this rulemaking.

How will we identify chemicals to be added or removed from the toxics pollutant list?

To identify chemicals to be added or removed from the toxics pollutant list:

- The chemical must be listed in one or more of the data sources listed below; and
- The chemical must have an associated inhalation toxicity value established to quantify human health risk and hazard.

What are the acceptable data sources?

There are three acceptable data sources:

- EPA Integrated Risk Information System (IRIS)
- California Office of Environmental Health Hazard Assessment (OEHHA) reference exposure levels and cancer potency factors
- Agency for Toxic Substances and Disease Registry (ATSDR) minimal risk levels

When two or more data sources have different toxicity values for the same chemical (and same averaging time), we will use the data source with the most recently derived toxicity value.

By setting the impact levels this way, we think we are capturing the most current state of science without having to conduct an independent analysis of primary literature. Such a level of inquiry was and is beyond the scope of our available resources. Instead, we are relying on the most recent analyses by these reputable agencies.

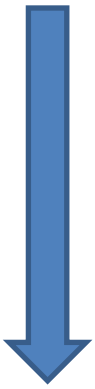
We may decide to deviate from the process described above if we determine that there is sufficiently compelling evidence of significant:

- Health concerns from potential exposure to pollutants not represented in one of the three data sources; or
- Limitations in the method used to calculate the values.

What will we do when there are several toxicity values for a single chemical?

In some cases, there may be several toxicity values available for a single chemical based on long-term cancer risk, and long-, intermediate-, and short-term non-cancer health impacts. To simplify this, we will establish a single acceptable source impact level per chemical.

To ensure the single acceptable source impact level value is protective of cancer risk and chronic and acute non-cancer hazards, we will determine acceptable source impact levels for differing averaging times based on the following hierarchy:



- Annual averaging time for carcinogenic chemicals.
- 24-hour averaging time for chemicals with chronic non-cancer toxicity values to protect against potential shorter-term exposures that may occur.
- 24-hour averaging time for chemicals with intermediate minimal risk level derived by ATSDR to protect against potential shorter-term exposures that may occur.
- 24-hour averaging time for chemicals with an acute minimal risk level derived by ATSDR.
- 1-hour averaging time for chemicals with an acute reference exposure level derived by OEHHA.

How will we calculate ASIL values?

We will use the following formulas to calculate ASIL values:

Calculating ASIL Values (annual averaging time) based on available cancer unit risk factor

$$\text{ASIL} = \frac{\text{target cancer risk}}{\text{URF x ELAF}}$$

Where:

Parameter	Description	Value	Units
ASIL	Acceptable Source Impact Level	Calculated	(ug/m^3)
Target cancer risk	Cancer risk level considered to be …	1 in one million or 1×10^{-6}	none
URF	Unit Risk Factor	Chemical-specific	$(ug/m^3)^{-1}$
ELAF	Early Life Adjustment Factor for those chemicals determined to be carcinogenic by a mutagenic mode of action	1.66 Factor of 10: birth to 2 years Factor of 3: age 3 to 16 years Factor of 1: age 17 to 70 years	none

Calculating ASIL Values (24-hour averaging time)

$$\text{ASIL} = \text{chronic RfC, chronic REL, or MRL}$$

Calculating ASIL Values (1-hour averaging time)

$$\text{ASIL} = \text{acute REL}$$

Where:

Parameter	Description	Value	Units
ASIL	Acceptable Source Impact Level	Chemical-specific	(ug/m^3)
Chronic RfC	EPA's Reference Concentration	Chemical-specific	(ug/m^3)
Chronic REL	California OEHHA's Chronic Reference Exposure Level	Chemical-specific	(ug/m^3)
Acute REL	California OEHHA's Acute Reference Exposure Level	Chemical-specific	(ug/m^3)
MRL	ATSDR's chronic, intermediate, or acute Minimal Risk Level	Chemical-specific	(ug/m^3)

EPA's list of hazardous air pollutants (HAP)

EPA's list of hazardous air pollutants contains 187 chemicals or chemical mixtures. 40 hazardous air pollutants do not appear on the list of toxic air pollutants because a published toxicity value from one of the three data sources mentioned above does not exist for these chemicals (see Table 1 below).

Table 1. List of 40 hazardous air pollutants not on the list of toxic air pollutants

CAS Number	HAP Chemical Name
0	Radionuclides (including radon)
51285	2,4-Dinitrophenol
60344	Methyl hydrazine
63252	Carbaryl
64675	Diethyl sulfate
72435	Methoxychlor
74884	Methyl iodide (Iodomethane)
75558	1,2-Propylenimine (2-Methyl aziridine)
77781	Dimethyl sulfate
79118	Chloroacetic acid

CAS Number	HAP Chemical Name
82688	Pentachloronitrobenzene (Quintobenzene)
84742	Dibutylphthalate
91225	Quinoline
92524	Biphenyl
92933	4-Nitrobiphenyl
94757	2,4-D, salts and esters
95954	2,4,5-Trichlorophenol
98077	Benzotrichloride
98862	Acetophenone
100027	4-Nitrophenol
106503	p-Phenylenediamine
106514	Quinone
114261	Propoxur (Baygon)
119904	3,3-Dimethoxybenzidine
119937	3,3'-Dimethyl benzidine
120809	Catechol
120821	1,2,4-Trichlorobenzene
121697	N,N-Dimethylaniline
123319	Hydroquinone
131113	Dimethyl phthalate
132649	Dibenzofuran
133904	Chloramben
140885	Ethyl acrylate
156627	Calcium cyanamide
334883	Diazomethane
534521	4,6-Dinitro-o-cresol, and salts
540841	2,2,4-Trimethylpentane
680319	Hexamethylphosphoramide
1582098	Trifluralin
3547044	DDE