Air Contaminants Benchmarks List - Notes

This table provides notes applicable to the Air Contaminants Benchmarks (ABCs) List.

Note #1

An amount (or concentration) of a metal's compound is the sum of the amounts (or concentrations) of that metal in those compounds. See section 1(2.0.1) of O. Reg. 419/05.

Note #2

Source of the Benchmark:
Standard - Standard under Ontario Regulation 419/05 - Air Pollution – Local Air Quality.
Guideline - Guideline value previously set out in Summary of Standards and Guidelines to support Ontario Regulation 419/05 - Air Pollution – Local Air Quality (PIBS 6569e01) document.
Screening Level (SL) set by the ministry based on a review of toxicity information and/or other jurisdictional levels.

See the Introduction (Sheet 1 (en) or Sheet 2 (fr)) for more information about the sources.

Note #3

Category:
B1 (Benchmark 1) - Exceedence of a B1 concentration triggers specific actions under O. Reg. 419/05 and is an offence under O. Reg. 1/17.
B2 (Benchmark 2) - Exceedence of a B2 concentration, or if no B2 value exists, triggers a toxicological assessment to determine the likelihood of adverse effect.

Note #4

Column list the date when the benchmark was first added to the ACB List (not the date when the benchmark was developed). If the value was subsequently reviewed, the date of the latest review is listed in the brackets.

Note #5

Changes to the previous ACB List (Version 2.0 - April 2018) are provided in ACB List (Sheet 3) with the exception of those contaminants removed from the list. See Table 5 for the list of contaminants with B2 values and Table 6 for the list of contaminants with B1 values, which were removed from the ACB List.

Some contaminant concentrations have decreased as a result of the ACB List update. Guidance on ministry expectations regarding concentrations that exceed B2 values is found in Guideline A-10: Procedure for preparing an Emission Summary and Dispersion Modelling (ESDM) report).

Note #6

Benzo[a]pyrene (B[a]P) is a surrogate for all polyaromatic hydrocarbons (PAHs). That is, the maximum modelled POI concentration of B[a]P is compared to the air standard. If the modelled concentration for B[a]P meets the air standard, all other PAHs which are emitted can be considered to have negligible carcinogenic risk and therefore adverse effects are not expected. In the rare instance that B[a]P is not a constituent of the emitted PAHs, please contact Technical Assessment and Standards Development Branch for how to assess.

This note does not apply to any individual PAH which has a B1 value (for example, naphthalene). This contaminant must be assessed and modelled separately.

Note #7

Standards for these contaminants have annual averaging periods. The ministry has also set assessment values for modelling and monitoring air concentrations within the annual time period. Table 2 lists the Modelling Assessment Values and Table 3 lists examples of Monitoring Assessment Values. The MECP has published additional guidance in a Technical bulletin: Using assessment values for contaminants with annual air standards

Note #8

URT = Upper Risk Threshold. URTs listed in Schedule 6 of O. Reg. 419/05 are not standards. URTs have separate and distinct regulatory and notification requirements. These requirements are set out in section

30 of O. Reg. 419/05.

Note #9

CARC: Carcinogen. This entry indicates that there is no assigned B1 value at this time. Emissions to the environment are to be prevented or minimized to the greatest extent possible.

Note #10

For contaminants with multiple B1 values, all values must be used for assessment purposes because each represents a different type of effect linked to a particular averaging period. Please note that some contaminants have both an applicable standard and guideline - in these situations B1 values are on 2 separate rows on the ACB List spreadsheet.

Note #11

The MECP published a technical bulletin on methodology for modelling assessments of contaminants with 10 minute average standards and guidelines. This bulletin addresses modelling assessments for B1 values with a 10-minute averaging period.

Note #12

An amount (or concentration) of metal(s) within a contaminant should be estimated based on percent composition and evaluated against listed benchmark(s).

Note #13

These odour-based limits (either 1-hour or 24-hour averaging period) have been flagged, because the MECP plans to update them in the future using an averaging period more relevant to odour effects (e.g. 10-minutes). In addition, these contaminants may need the development of health-based standards.

Note #14

For facilities releasing only one of the four major components of TRS (dimethyl disulphide or dimethyl sulphide or hydrogen sulphide or mercaptans), the respective B1 value for that specific reduced sulphur compound will apply to the emission (not the TRS standard).

If a facility emits a mixture of TRS compounds (i.e., more than one species of the four major components of TRS), then the B1 values for TRS apply (see subsection 20.1 and 20.2 of O. Reg. 419/05). In this case benchmarks for the individual components of TRS will not apply.

Note #15

See O. Reg. 463/10 "Ozone Depleting Substances and Other Halocarbons" made under the Environmental Protection Act, which is based on the Montreal Protocol, for further restrictions on these, and several other ozone-depleting contaminants.

Note #16

Contaminant should be evaluated against the B2 value. In addition, when emitted simultaneously with other contaminants for which the same benchmark(s) is listed in Note 16, total metal/metal compound concentration(s) should be estimated on a molecular weight and assessed against B1 value(s) listed along with Note 16.

Note #17

Half-hour standard for carbon monoxide is based on high background levels from automobiles (i.e., individual facilities are only allowed a small fraction of the total airshed).

Note #18

MECP plans to update them limit for Cresol (isomers or mixture). Isomers of cresol include: o-cresol (CAS RN 95-48-7), p-cresol (CAS RN 106-44-5), and m-cresol (CAS RN 108-39-4).

Note #19

MECP limit for Xylenes (isomers or mixture). Isomers of Xylene include: o-Xylene (CAS 95-47-6), p-Xylene (CAS 106-42-3), and m-Xylene (CAS 108-38-3).

Note #20

This contaminant belongs to a group of compounds known as borates. In the event this compound is being simultaneously emitted with other borates, the borate components of the emitted contaminants should be summed together and compared with the B1 value for boric acid (CAS RN 10043-35-3).

Note #21

MECP guideline for Polychlorinated biphenyls (PCBs) is used to evaluate the non-dioxin-like PCBs. Dioxin-like PCBs (listed in Table 1) are to be evaluated against the air standard for Dioxins, Furans and Dioxin-like PCBs.

Note #22

Applies to chromium (Cr) (metallic, divalent and trivalent) species alone or to the percentage of Cr (metallic, divalent and trivalent) relative to total Cr.

Note #23

Phosphoric acid is expressed as total phosphoric acid and an amount (or concentration) of total phosphoric acid shall be calculated in accordance with the following formula:

A = B + (C × 1.40), where,
A = the amount (or concentration) of total phosphoric acid
B = the amount (or concentration) of phosphoric acid
C = the amount (or concentration) of phosphoric pentoxide
(see subsection 1(2.3) of O. Reg. 419/05)

Note #25

Odour-based 10-minute standards for hydrogen sulphide, mercaptans and total reduced sulphur (TRS) compounds have been set. Subsection 20(2.2) of O. Reg. 419/05 states that it is an offence to discharge a contaminant with a standard that is in Schedule 3 with a 10-minute averaging period such that the concentration exceeds the standard at any location where and when human activities regularly occur. This offence relates to a monitored or measured exceedence, not to a modelled exceedence. See also subsection 20(2.3). For further information on modeling for 10-minute averages, please see Note 11.

Note #26

Benzene exposure resulting from gasoline emission should be estimated separately based on case-specific data and be compared to the MECP air standard for benzene (CAS RN 71-43-2).

Note #27

In the event that kerosene and kerosene-like compounds are being simultaneously emitted, their maximum POI concentrations should be summed together and compared with the B2 value for kerosene (CAS RN 8008-20-6).

Note #28

Nitrogen oxides (NOx) are defined as the sum of nitrogen dioxide (NO2) and nitric oxide (NO). Emissions of NOx consist mainly of NO, with some NO2 but in ambient air, NO converts to NO2. NO2 has adverse health effects at much lower concentrations than NO. Recognizing these factors, the Schedule 3 standard for nitrogen oxides is based on the health effects of NO2.

NOx (µg/m3) shall be calculated in accordance with the following formula, where the concentration of NO is multiplied by 1.53 to convert to NOx:

A = (B × 1.53) + C, where,
A = the amount (or concentration) of nitrogen oxides
B = the amount (or concentration) of nitric oxide
C = the amount (or concentration) of nitrogen dioxide
(See subsection 1 (2.2) of O. Reg. 419/05)

In evaluating monitoring data, the NOx B1 values with 1-hour and 24-hour averaging times should be only

compared to monitored NO2 data.

In accordance with section 20.4 of O. Reg. 419/05, sections 19 and 20 do not apply to a discharge that occurs as a result of the use of a standby power source if all regulatory criteria are met. In order to determine compliance with paragraph 5 of subsection 12(1) of O. Reg. 1/17 with respect to the discharge of NOx from a standby power source that meets the criteria in section 20.4 of O. Reg. 419/05, please refer to the Emergency Generator Checklist for the applicable concentration.

Note #29

Applies to pure Cr(VI) species or to the percentage of Cr(VI) species relative to total chromium.

Note #30

The air standard for dioxins, furans, and dioxin-like PCBs requires the calculation of the total toxicity equivalent (TEQ) concentration contributed by all dioxin-like compounds in the mixture. Table 1 sets out Schedule 8 of O. Reg. 419/05. In accordance with subsection 1 (2.0.2) of O. Reg. 419/05, the following formula must be used to calculate the total concentration of dioxins, furans and dioxin-like PCBs:

A = Σ(B × C), where,
A = the amount (or concentration) of total dioxins, furans and dioxin-like PCBs in TEQ
B = the amount (or concentration) of each dioxin-like compound listed in Table 1
C = the corresponding TEF for each dioxin-like compound listed in Table 1

For the purpose of calculating the total TEQ concentration for a mixture of dioxin-like compounds, a value of half the minimum detection limit (MDL) should be substituted for concentrations less than the MDL.

Note #31

Mercaptan means any organic compound that contains a thiol group. Mercaptans are expressed as methyl mercaptan; an amount (or concentration) of total mercaptans shall be calculated in accordance with the following formula:

A = Σ((B × 48) ÷ C), where,
A = the amount (or concentration) of total mercaptans, expressed as methyl mercaptan,
B = the amount (or concentration) of each mercaptan,
C = the molecular weight of each mercaptan

(See subsections 1(1) and 1(2.1) of O. Reg. 419/05).

Note #32

Mineral spirits means a petroleum distillate mixture of C7 to C12 alkanes (paraffins) and cycloalkanes (naphthenes) where the mixture is in the range from 5 to 20 per cent aromatics by weight, is less than 0.1 per cent benzene by weight, has a boiling point in the range from 130 to 220 degrees Celsius and has a flash point in the range from 21 to 60 degrees Celsius (see subsection 1(1) of O. Reg. 419/05).

Some solvents which meet this definition are: Naphtha (CAS 8030-30-6), Ligroine (CAS 8032-32-4), Stoddard solvent (CAS 8052-41-3), Heavy hydrotreated petroleum naphtha (CAS 64742-48-9), Medium aliphatic solvent petroleum naphtha (CAS 64742-88-7), and Light aliphatic solvent petroleum naphtha (CAS 64742-89-8).

Note #33

Total reduced sulphur (TRS) compounds means a mixture of reduced sulphur compounds (i.e. primarily dimethyl disulphide, dimethyl sulphide, hydrogen sulphide and mercaptans). An amount (or concentration) of total reduced sulphur (TRS) compounds is calculated as the sum of the amounts (or concentrations) of the reduced sulphur compounds (see subsections 1(1) and 1(2.4) of O. Reg. 419/05).

Date of page preparation: Nov 5, 2023