OHCOW Health-Based OEL Case/Logic

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Which countries are appropriate for OEL consideration? In the 1980's an Ontario Joint Steering Committee used the criteria of having the documentation available for review, having a similar economy, and having bipartite input and then applied these criteria to come up with a list. The Steering Committee criteria meant that the ACGIH values were excluded. OHCOW has opted to defer to the list developed by GESTIS and to their selection criteria or process as well as the most current ACGIH TWAs. Since the exercise in the 1980's Ontario has moved to adopting a given year's ACGIH values with a process in place for interested parties to make submissions and or comment. Both sources are easily accessible and maintained on a regular basis should the user wish to delve further.

The OEL Adjustment Tool provides the user with a means of assessing exposure over non-traditional work periods i.e., 8 to 10 hrs per day, 40 hours per week using health-based criteria from values as used by other jurisdictions. Because these values are being used in a situation where exposure occurs over extended periods some adjustments have been made for compounds with no TWA or multiple TWA's and other factors. The Table below supplies the case/logic for deriving a new health-based limit given a TWA, STEL or C, and revision based on a regulated or guideline excursion limit.

Where available, comments regarding the OEL have been transferred as reference. The notations use a 3-letter code plus a 2-digit year (yy) for the last revision date as found in the source reference. ACGIH 2017 values are referenced as ACG17 and so on while the ISO country code is used with the year as noted in GESTIS e.g., the Netherlands 2021 as NLD21 and OHCOW is OHC21.

For more information, **Click Here.**

Table: Case/Logic for Health-based OEL selection
Health-based limits (most conservative and protective)

Case	if Ont	And	then	Source	Notations/Comments
0	TWA ≤	2021 ACG	accept	Ont 1; Ont C	
1	TWA >	2021 ACG	ACG & apply remaining criteria	ACGyy	"
2	(OHC)	submission	OHC	OHCyy	OHCOW submission document
3	ACG /OHC >	GESTIS	apply remaining criteria	XXXyy	"
4	Asbestos		0.002 f/cc All fibre values	NLD21	
5	no TWA	STEL no C	TWA = STEL/3	OHC21	OEL source + excursion factor
6	no TWA	C no STEL	TWA = C/5	OHC21	OEL source + excursion factor
7	no TWA	STEL & C	TWA = lesser STEL/3 or C/5	OHC21	OEL source + excursion factor
8	TWA	STEL < 3x TWA	accept	XXXyy	comments if any
9	TWA	C < 5xTWA	revise TWA => C/5	OHC21	"

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Health-based limits (most conservative and protective)

Case	if Ont	And	then	Source	Notations/Comments
10	TWA	STEL=TWA	revise TWA => STEL/3	OHC21	"
11	TWA	C=TWA	revise TWA => C/5	OHC21	"
12	TWA	no IFV	<TWA w/IFV	OHC21	"
13	TWA	Dual OEL	User lower (acceptable)		criteria
14	(L) ALARA	no TWA	(L) / LOQ	OHC21	note NIOSH method LOQ?
15	(L) ALARA	w/ TWA	(L) and TWA	XXXyy	source notes
16	TWA	TWA<LOQ	[LOQ]	XXXyy	"
17	TWA (R)	= TWA (I)	TWA (I)	XXXyy	source notes
18	(I) & (R)	TWA (R)	= TWA (I)	OHC21	source notes
19 PNOS	TWA	10 (I) / 3 (R)	0.4 mg/m^3 (R)	OHC	submission

Legend:

TWA	time-weighted average
STEL	short-term exposure limit
C	ceiling exposure limit
OEL	occupational exposure limit
ACG	**ACG**IH plus the last 2 digits of the year(yy) the OEL was last updated with the exception of ACG17 which is the last MLTSD value in legislation.
MLTSD	Ministry of Labour, Training and Skills Development (Ontario)
XXXyy	3 letter ISO country code and yy is the year last updated in GESTIS e.g., Denmark 2021 is DNK21
OHCyy	**OHC**OW health-based limit plus year last revised by OHCOW e.g., OHC21
f/cc	fibers per cubic centimeter

GESTIS	**Ge**fahr**st**off**i**nformations**s**ystem der Deutschen Gesetzlichen Unfallversicherung (Information system on hazardous substances of the German Social Accident Insurance). The GESTIS Substance Database is maintained by the Institut für Arbeitsschutz der Deutschen Gesetzlichen Unfallversicherung (IFA, Institute for Occupational Safety and Health of the German Social Accident Insurance).
IFV	inhalable fraction and vapour
(L)	designation to denote an exposure as low as reasonably achievable (ALARA)
LOQ	limit of quantification
(I), (R)	inhalable fraction (also Inh); respirable fraction
PNOS	particles not otherwise specified

Cases 0 – 4

[0] If the Ontario TWA is less or equal to the current ACGIH value and there is no lower GESTIS value, accept the Ontario TWA value.

[1] The health-based OEL selection begins by comparing the Regulation 833/90 OEL as found on the 2021 MLTSD web-based consolidated table. Since a majority of the values are currently based on the 2017 ACGIH TLVs, the 2021 TLV is substituted.

[2] OHCOW has over the years provided submissions to both the MLTSD and the ACGIH on various substances. These OELs are used when lower and are changed if required based on the remaining case/logic.

[3] This value is now compared to the GESTIS data set which when searched limits records to those jurisdictions which have an OEL for that substance.
[4] Asbestos is noted at this point as the consensus was to use the OEL published by the Netherlands which is applied to all types of asbestos.

Cases 5, 6 and 7
Where there is no TWA either in Ontario or in the GESTIS data set but the compound has either a STEL or a C or both then the excursion factor as found in Reg 833/90 is applied in reverse. This means using a TWA of the STEL divided by 3 [5], C divided by 5 [6] or the lower if both [7].

Cases 8 - 11
[8] These cases deal with compounds that have a TWA but also a STEL or C value. Some jurisdictions have STEL values lower than the 3 x TWA excursion. The TWA and STEL are accepted.

[9-11] If the C value of the proposed TWA is less than 5 times the TWA apply the C/5 case and use that as the TWA.

Cases 12 - 16
[12] For those compounds that may have a notation indicating vapour and/or an aerosol exposure component the following is applied. If the proposed TWA is lower and Ontario uses a vapour/aerosol designation and the proposed TWA does not then the latter is used and the source becomes OHC21 and the IFV notation is noted in the comments e.g. OHC21 IFV (ACG20) or Aerosol (DEN21) etc. This recognizes the contribution the aerosol component may contribute to an exposure.

[13] For substances causing cancer some jurisdictions use a dual OEL. For example, Germany has "acceptable" and "tolerable" limits. The lower of the two values is used and the criteria noted in the comments. The latter is often found in combination with an Ontario (L) ALARA notation.

[14,15,16] Those Ontario compounds designated (L) maintain that notation. In addition, if there is no TWA then the Limit of Quantification (LOQ) is used as an extended shift TWA and a guide to ALARA. If the there is a TWA that value is used, the (L) designation and source are noted. Where the TWA is lower than the LOQ, the LOQ is used as the TWA. LOQ source/method is (should be) noted.

Case 17 - 19
[17] For OELS with only a respirable limit where a lower proposed TWA is presented as only inhalable the proposed TWA is used and noted as the inhalable.
[18] In the case where there is both an inhalable and respirable Ontario limit but only a proposed lower respirable TWA, the latter is used but noted as inhalable rather than respirable.
[19] For all substances considered PNOS the current dual limit approach is replaced with 0.4 mg/m^3 as respirable only and noted as OHC and source reference (Xerox study). This value has been used in OHCOW submissions as found on the OHCOW website as noted previously.