

# RR Program's Soil RCL Spreadsheet Update

December 2018

DNR-RR-052h

The Wisconsin DNR Remediation and Redevelopment Program (RR) has updated the numerical soil standards in the RR spreadsheet of residual contaminant levels (RCLs). The RCLs were determined using the recently-updated U.S. EPA RSL web-calculator. This document provides a summary of changes to the direct-contact RCLs (DC-RCLs) that are now in the November 2018 spreadsheet. Compared to the previous (June 2018) spreadsheet:

- Seven (7) new chemicals were added (Table 1).
- Five (5) chemicals were removed (Table 2).
- Three (3) chemicals either had a name change or their direct-contact RCLs revised (Table 3).
- No groundwater-protective RCL was changed.

The last section of this document has the exposure parameter values used to calculate the DC-RCLs. All U.S. EPA exposure defaults were used, with the exception of selecting: A hazard quotient of 1, and the climatic zone of Chicago, IL. The updated RCLs may affect the closure decision for any current or incoming closure requests. Under Wis. Admin. Code § NR 724.19, responsible parties are required to comply with new or revised standards if the DNR determines that compliance to a more stringent revised standard is necessary to ensure that the remedial action will be protective of public health, safety, welfare or the environment.

**Table 1: List of New Chemicals Added to the RR's Spreadsheet of RCLs (November 2018)**

*(For the November 2018 update, 7 new CAS's were added.)*

Contaminant	CAS Number	New DC-RCLs (mg/kg)		Basis
		NonIndustrial	Industrial	
Lanthanum	7439-91-0	3.91E+00	5.84E+01	nc
Lanthanum Acetate Hydrate	100587-90-4	1.31E+00	1.71E+01	nc
Lanthanum Chloride Heptahydrate	10025-84-0	1.46E+00	2.18E+01	nc
Lanthanum Chloride, Anhydrous	10099-58-8	2.21E+00	3.31E+01	nc
Lanthanum Nitrate Hexahydrate	10277-43-7	1.25E+00	1.87E+01	nc
Styrene-Acrylonitrile (SAN) Trimer	57964-39-3	1.90E+02	2.46E+03	nc
Tert-Butyl Acetate	540-88-5	1.12E+01	4.86E+01	ca

**Table 2: List of Chemicals Removed from the RR's Spreadsheet of RCLs (November 2018)**

*(For the November 2018 update, 5 generic dioxins were removed. Those removed have CAS#s that are not in the U.S. EPA RSL table of Dioxin Toxicity Equivalence Factors. No TEF means no toxicity equivalent concentration for them.)*

Contaminant	Removed CAS Number
Hexachlorodibenzo-p-dioxin	34465-46-8
HpCDD, 2,3,7,8-	37871-00-4
HpCDF, 2,3,7,8-	38998-75-3
HxCDF, 2,3,7,8-	55684-94-1
PeCDD, 2,3,7,8-	36088-22-9

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This publication is available in alternative format upon request. Please call 608-267-3543 for more information.



**Table 3: List of Chemicals that Changed in RR's Spreadsheet (updated November 2018)**

One chemical has updated toxicity values, so its DC-RCLs changed, and two (2) have names different from June 2018.

Basis: ca = Cancer; nc = Noncancer endpoint

**Bold** chemical name indicates its DC-RCLs have decreased.

**Red** values indicates RCL has decreased by a factor of 5 or more.

Contaminant	Old Name	CAS Number	Volatile? June 2018	Volatile? Nov. 2018	Non-Industrial DC-RCL (mg/kg)			Industrial DC-RCL (mg/kg)		
					Old	Current	Basis	Old	Current	Basis
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	No	No	6.06	8.34	ca	28.	38.4	ca
HpCDD, 1,2,3,4,6,7,8,-	HCDD, 1,2,3,4,6,7,8,-	35822-46-9	Yes	Yes	4.84E-04	4.84E-04	ca	0.002	0.002	ca
Pronamide	Propyzamide	23950-58-5	No	No	4,740.	4,740.	nc	61,500.	61,500.	nc

## Exposure Parameter Values Used in Determining Soil DC-RCLs

### Update to RR-890 and RCL Spreadsheet (November 2018)

To calculate DC-RCLs, the default hazard quotient and climatic zone need to be changed in the U.S. EPA RSL web-calculator.

Select HQ of 1.

Select Screening Level Type

Regional Screening Levels (RSLs)

Regional Removal Management Levels (RMLs)

Select Hazard Quotient

0.1

1

Other:

Select "Chicago, IL" to get acceptable values of PEF and VF necessary in the calculations in both non-industrial and industrial settings.

In October 2016, the Wisconsin Department of Health Services recommended using the default exposure values in the U.S. EPA RSL website when calculating soil RCLs.

This means that the RSL web-calculator exposure defaults (shown in the rightmost column below) need **not** be changed even if they are not the same as what are in NR 720.

	NR 720 RCL Defaults <i>(Replaced by values on the right)</i>	Web-Calculator Defaults
<b>Non-Industrial Setting</b>		
BW-Adult (kg):	70	<b>80</b>
Exposure Duration (yr):	30	<b>26</b> (= 6 as child + 20 as adult)
SA-Child (cm <sup>2</sup> /d):	2800	<b>2373</b>
SA-Adult (cm <sup>2</sup> /d):	5700	<b>6032</b>
T (VF Aver. time):	30 yr = 9.5e8 s	<b>26 yr = 8.2e8 s</b>
<b>Industrial Setting</b>		
BW-Adult (kg):	70	<b>80</b>
ED (yr):	25	<b>25</b>
AFw:	0.2	<b>0.12</b>
SA-Adult (cm <sup>2</sup> /d):	3300	<b>3527</b>
T (VF Aver. time):	30 yr = 9.5e8 s	<b>26 yr = 8.2e8 s</b>

**Particulate Emission Factor**

Chicago, IL

City (Climatic Zone) - Selection based on most

0.5 A<sub>s</sub> (acres)

1359344438 PEF (particulate emission factor) m<sup>3</sup>/kg

93.77 Q/C<sub>wp</sub> (g/m<sup>2</sup>-s per kg/m<sup>3</sup>) PEF Selection

16.2302 A (PEF Dispersion Constant)

18.7762 B (PEF Dispersion Constant)

216.108 C (PEF Dispersion Constant)

0.5 V (fraction of vegetative cover) unitless

4.69 U<sub>m</sub> (mean annual wind speed) m/s

11.32 U<sub>t</sub> (equivalent threshold value)

0.194 F(x) (function dependant on U<sub>m</sub>/U<sub>t</sub>) unitless

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**Volatilization Factor**

Chicago, IL

City (Climatic Zone)

0.5 A<sub>s</sub> (acres)

68.18 Q/C<sub>wp</sub> (g/m<sup>2</sup>-s per kg/m<sup>3</sup>) VF Selection

11.911 A (VF Dispersion Constant)

18.4385 B (VF Dispersion Constant)

209.7845 C (VF Dispersion Constant)

0.006 foc (fraction organic carbon in soil) g/g

1.5 ρ<sub>b</sub> (dry soil bulk density) g/cm<sup>3</sup>

0.15 θ<sub>w</sub> (water-filled soil porosity) L<sub>water</sub>/L<sub>soil</sub>

2.65 ρ<sub>s</sub> (soil particle density) g/cm<sup>3</sup>

819936000 T (exposure interval) s