RR Program's Soil RCL Spreadsheet Update

December 2017 **DNR-RR-052f**

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. All EPA exposure defaults were used, with the exception of selecting a hazard quotient of 1 and selecting Chicago, IL, for the climatic zone in the web-calculator. This document provides a summary of changes to the direct-contact RCLs (DC-RCLs) that are now in the December 2017 spreadsheet. The last section of this document has the exposure parameter values used to calculate the RCLs.

Table 1 (below) lists new DC-RCLs for several chemicals (*e.g.*, Diphenyl ether) that were not in earlier versions of the spreadsheet. Table 2 lists the chemicals that have been removed from the previous update. Table 3 (next page) has the chemicals whose DC-RCLs have changed from March 2017. Table 4 has the chemicals whose groundwater-protective RCLs have changed.

The updated RCLs may affect the closure decision for any current or incoming closure requests. Under s. NR 724.19, Wis. Adm. Code, 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 (December 2017)

(For the December 2017 update, 6 new CAS were added since March 2017.)

Perfluorobutanesulfonate was added with the same parameters (except CAS) as Perfluorobutane sulfonic acid (in Table 3).
Perfluorooctanesulfonate was added with the same parameters (except CAS) as Perfluorooctane sulfonic acid (in Table 3).

		New DC-RCLs (mg/kg)		
Contaminant	CAS Number	NonIndusrtrial	Industrial	Basis
Diphenyl Ether	101-84-8	4.85E+01	2.04E+02	nc
Lactonitrile	78-97-7	1.26E+01	1.64E+02	nc
Perfluorobutanesulfonate	45187-15-3	1.26E+03	1.64E+04	nc
Perfluorooctanesulfonate	45298-90-6	1.26E+00	1.64E+01	nc
Toluic Acid, p-	99-94-5	3.16E+02	4.10E+03	nc
Tribromophenol, 2,4,6-	118-79-6	5.69E+02	7.39E+03	nc

Table 2: List of Chemicals Removed from the RR's Spreadsheet of RCLs (December 2017)

(For the December 2017 update, 6 chemicals were removed since March 2017.)

Contaminant	Removed CAS Number
Barium Chromate	10294-40-3
Calcium Chromate	13765-19-0
Dimethylphthalate	131-11-3
Lead Chromate	7758-97-6
Sodium Dichromate	10588-01-9
Strontium Chromate	7789-06-02

Table 3: List of Direct-Contact RCLs that Changed in RR's Spreadsheet (updated December 2017)

1. A few chemicals were renamed. Their previous names are in the "Old Name" column. Perfluorobutane sulfonic acid (PFBS) was previously Perfluorobutane Sulfonate (PFBS). Perfluorooctane sulfonic acid (PFOS) was previously Perfluorooctane Sulfonate (PFOS).
2. The chemical DDD,p,p'- is now deemed a volatile when it wasn't previously.
3. A few chemicals have new toxicity values, so their DC-RCLs changed.

Bold chemical name indicates its non-industrial RCL has decreased.
Red values indicates RCL has decreased by a factor of 5 or more.

Contaminant	Old Name (March 2017)	CAS Number	Volatile? Mar. 2017?	Volatile? Dec. 2017	Non-Industrial DC-RCL (mg/kg) Old	Non-Industrial DC-RCL (mg/kg) Current	Non-Industrial DC-RCL (mg/kg) Basis	Industrial DC-RCL (mg/kg) Old	Industrial DC-RCL (mg/kg) Current	Industrial DC-RCL (mg/kg) Basis
Bromo-3-fluorobenzene, 1-		1073-06-9	Yes	Yes	896.	23.5	nc	896.	350.	nc
Bromo-4-fluorobenzene, 1-		460-00-4	Yes	Yes	323.	23.5	nc	323.	323.	Csat
Bromopropane, 1-		106-94-5	Yes	Yes	966.	322.	nc	966.	966.	Csat
DDD, p,p`- (DDD)	DDD	72-54-8	*No*	*Yes*	2.26	1.9	nc	9.57	9.57	ca
Dichloropropane, 1,2-		78-87-5	Yes	Yes	0.406	3.4	ca	1.78	15.	ca
Glutaraldehyde		111-30-8	No	No	100,000.	6,030.	nc	100,000.	71,400.	nc
Heptanal, n-		111-71-7	Yes	Yes	209.	35.2	nc	209.	148.	nc
Perfluorobutane sulfonic acid (PFBS)	Perfluorobutane Sulfonate (PFBS)	375-73-5	No	No	1,260.	1,260.	nc	16,400.	16,400.	nc
Perfluorooctane sulfonic acid (PFOS)	Perfluorooctane Sulfonate (PFOS)	1763-23-1	No	No	1.26	1.26	nc	16.4	16.4	nc

Table 4: List of Chemical Whose Groundwater-Protective RCLs Changed (December 2017)

The previous March 2017 update carried over the GW-protective RCLs (GW-RCLs) from June 2016. For the December 2017 update, there were small changes for 5 chemicals whose toxicity values changed since June 2016. The 2 PAHs in the list have their toxicity values tied to benzo[a]pyrene's whose toxicity values changed in January 2017. The 2 pesticides (Dimethoate and EPTC) were affected with the switch from EPA IRIS to EPA Office of Pesticide Programs (OPP) for their toxicity values. Lastly, Trimethybenzenes' toxicity values were previously from PPRTV; now, they are from IRIS.

Bold chemical name indicates chemical's RCL has slightly decreased.

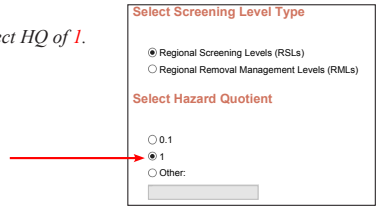
Contaminant	CAS Number	GW-RCL (mg/kg) Old	GW-RCL (mg/kg) Current (December 2017)
Benzo(b)fluoranthene (PAH)	205-99-2	0.2397	0.2390
Chrysene (PAH)	218-01-9	0.0723	0.0721
Dimethoate	60-51-5	4.51E-04	4.52E-04
EPTC	759-94-4	0.1316	0.1322
Trimethylbenzenes (1,2,4- and 1,3,5- combined)	95-63-6 / 108-67-8	6.91E-01	6.89E-01

Update to RR-890 and RCL Spreadsheet (December 2017)

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

Exposure Parameter Values Used in Determining DC-RCLs

Select HQ of 1.



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

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