



NR 538 TAC: Proposed Code Changes, Appendix I

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Appendix I Changes

- Uses new “byproduct specific” format
- Still based on ASTM water leach test and totals analysis results
- Parameters are byproduct specific
- Testing parameters do not reduce at higher categories
- Reduced number of categories; existing Category 1 and Category 3 are deleted





Appendix I Changes

- Existing Category 1, “unrestricted use” is eliminated
- No byproduct could meet revised Category 1 standards at PALs and 10-7 TCR, 0.2 THQ
- Revised Category 1 replaces existing Category 2
- Addition of FGD Gypsum
- No separate paper mill sludge





Appendix I Revised Categories

Existing	Category 1	Category 2	Category 3	Category 4	Category 5
Proposed	<u>Deleted</u>	Category 1	<u>Deleted</u>	Category 2	Category 3





Water Leach Test (ASTM D3987-12)	Category 1	Category 2
Parameter	mg/L	mg/L
Antimony	0.006	0.03
Arsenic	0.01	0.05
Barium	2	10
Beryllium	0.004	0.02
Boron	1	5
Cadmium	0.005	0.025
Chloride	1250	2500
Chromium, Tot.	0.1	0.5
Cobalt	0.04	0.2
Fluoride	4	20
Lead	0.015	0.075
Mercury	0.002	0.01
Molybdenum	0.04	0.2
Selenium	0.05	0.25
Sulfate	1250	2500
Thallium	0.002	0.01

Totals Analyses	Category 1
Parameter	mg/kg
Antimony	93.4
Arsenic	8
Barium	43700
Beryllium	459
Boron	46600
Cadmium	197
Chromium, Hex.	6.36
Lead	52
Mercury	13.2
Molybdenum	1170
Selenium	1170
Thallium	2.34
Vanadium	1170

Coal Ash Industrial Byproduct Characterization





Proposed Standards

	ASTM Water Leach mg/L	Totals mg/kg
Category 1	NR 140 ES Health NR 140 Welfare * 5	US EPA Occupational Soil Cleanup Calculator Hazard Quotient = 0.2, Threshold Risk = 10^{-6}
Category 2	NR 140 ES Health * 5 NR 140 Welfare * 100	Does not meet Category 1
Category 3	Does not meet Category 1 or 2	Does not meet Category 1; not a hazardous waste





Revised Appendix I Parameters

- Foundry sand parameters from Phase II Constituents of Concern per EPA Risk Assessment 530-R-14-003 (groundwater and ecological).
- Parameters for ferrous slag based on values that were detected above existing Category 1 in slag sample results (Charter Steel, Kohler, Waupaca Foundry).
- Coal ash parameters from Appendix III and IV, 40 CFR 257 (CCR Rule) and Constituents of Concern for groundwater and surface water per EPA 530-R-14-001.
- Parameters for FGD gypsum based on values that were detected above Category 1 standards (WE Energies).
- “Other” category includes all parameters that have a standard.





Appendix I, Water Standards

- ASTM Water Leach Test D3987-12
 - Still most appropriate test methodology
 - NR 140 Enforcement Standards
 - Health ES (Cat. 1)
 - Welfare ES times 5 (Cat. 1)
 - Added cobalt, vanadium and molybdenum
 - Deleted total cyanide and phenols
 - ES times 5 for Health (Cat.2)
 - ES times 100 for Welfare (Cat. 2)





Direct Contact Standards

- Totals Analysis per EPA SW-846
 - U.S EPA risk-based screening level calculator
 - Removed phenols and three PAH's
 - Added aluminum, copper and manganese
 - Note both increases and decreases based on calculations and new risk data
 - PAHs removed for coal ash (EPA, DNR data)





Direct Contact Standard Values

- Screening Methods:

The proposed direct contact standards are based on the U.S.EPA risk-based regional screening level web-calculator (http://epa-prgs.omi.gov/cgi-bin/chemicals/csl_search) utilizing the latest human toxicity values for each contaminant. The proposed standard for each contaminant is the least among the values calculated at a target cancer risk (TCR) of 10^{-6} , at a non-cancer target hazard quotient (THQ) of 0.2 and, for volatiles, at its soil saturation index.

- 1996 – 1×10^{-7} at THQ of 0.2 (Cat. 1)
- 2016 – 1×10^{-6} at THQ of 0.2 (New Cat. 1)
- NR 720 – 1×10^{-6} at THQ of 1.0





Direct Contact Standard Values

- Arsenic and lead standards are set at the Background Threshold Value for non-outlier trace element maximum levels in WI surface soils from USGS Report 5202-2011 (s. NR 720 Wis. Adm. Code).
- Justify using TCR of 10^{-6} (vs. 10^{-7}) by use limitations on legitimate use esp. maintaining current residential use restrictions
- THQ of 0.2 for synergistic unknowns





Soil or Plant Additive

- Added special table for use of FGD gypsum as a soil or plant additive (DATCP)
- Only for use of FGD gypsum
- Based on NRCS maximum contaminant values in Code 333 for use of gypsum (including FGD) as soil amendment
- No water leach test required



Beneficial Use Methods		Industrial Byproduct Category		
		3	2	1
NR 538.10		3	2	1
(1)	Encapsulated Uses	x	x	x
(2)	Waste Stabilization / Solidification	x	x	x
(3)	Supplemental Fuel Source / Energy Recovery	x	x	x
(4)	Landfill Daily Cover / Internal Structures at landfills having a leachate collection system	x	x	x
(5)	Confined Geotechnical Fill (a) commercial, industrial or institutional building subbase (b) paved lot base, subbase & subgrade fill (c) paved roadway base, subbase & subgrade fill (d) utility trench backfill (e) bridge abutment backfill (f) tank, vault or tunnel abandonment (g) slabjacking material (h) soil and pavement base stabilization for structural improvements listed in (5)(a) - (c) (i) controlled low strength material (flowable fill) for structural improvements listed in (5)(a), (d), (e) and (f)		x	x
(6)	Soil or Plant Additive ¹		x	x
(7)	Capped Transportation Facility Embankment			x
(8)	Unconfined Geotechnical Fill			x
(9)	Nonmetallic Mine Reclamation			x
(10)	Unbonded Surface Course			x
(11)	Bonded Surface Course			x
(12)	Decorative Stone			x
(13)	Cold Weather Abrasive			x
(14)	Blasting Grit/Abrasive			x





Rule Language Changes

- NR 538.06(1) Initial Characterization
 - General. Industrial byproducts that are beneficially used under this chapter shall be characterized as specified in this section to determine their appropriate categorization under s. NR 538.08. The results of this characterization shall be reported to the department as specified in s. NR 538.14. **Written concurrence of the initial certification by the department shall be required prior to use. The department has the option of either concurring with the characterization or requesting additional information or analysis. The applicant shall be notified, in writing, of the department's decision within 10 business days of receipt of the initial certification request.**





Rule Language Changes

- NR 538.06(2)
 - Initial characterization. A representative sample of **each** an industrial byproduct shall be properly characterized **at the point of generation** prior to beneficial use to determine its category under s. NR 538.08. **The byproduct will need a case specific approval under s. NR 538.08(6) if it is subject to any post-generation conditioning or processing including the addition of additives, hydration or oxidation that changes the physical or chemical nature of the byproduct.**





Rule Language Changes

- NR 538.06(3)(b)
 - (b) All industrial byproducts that are to be beneficially used under this chapter shall be determined not to be a hazardous waste as defined under s. NR 660.10 (52) using a method specified under ch. NR 661. **The generator shall provide supporting documentation of the waste determination along with the initial certification submitted to the department per s. NR 538.06(1).**





Rule Language Changes

- NR 538.06(3)(c)
 - (c) All industrial byproducts ~~which are characterized to determine eligibility for category 1 to 4 under s. NR 538.08 (1) to (4)~~ shall be analyzed using **the most recent version of the** ASTM D3987-85 water leach test, **except byproducts used as a soil or plant additive in accordance with s. NR 538.10(6).**





Rule Language Changes

- NR 538.06(4)(b)
- **(eb)** A representative sample of each ~~category 2~~ industrial byproduct shall be recharacterized in the same manner as specified for the initial characterization once every 2 years. ~~Recharacterization is not required for any category 2 industrial byproduct of which less than 2000 cubic yards were beneficially used or stored for beneficial use during the previous 2 year period.~~





Rule Language Changes

- NR538.08(2)
 - (42) Category 4 **2** industrial byproducts. Industrial byproducts that have been determined to contain less than the concentrations specified for the parameters listed in **the category 2** ch. NR 538 Appendix I, **Tables 3**, **but are at or above the concentrations in category 1** and ~~are not category 1 to 3 industrial byproducts~~ are category 4 **2** industrial byproducts.





Rule Language Changes

- NR538.08(3)
 - (~~5~~3) Category ~~5~~ 3 industrial byproducts. Industrial byproducts that have been determined not to be a hazardous waste as defined in s. NR 660.10 (52) **but are at or above the category 2 concentrations in the Appendix I tables** and ~~are not category 1 to 4 or 2~~ industrial ~~byproducts~~ are category ~~5~~ 3 industrial byproducts.





Rule Language Changes

- NR538.08(4)
- (4) **Mixing.** If separate industrial byproducts are mixed together, the resulting mixture shall be assigned the category of the highest category byproduct in the mixture unless otherwise approved by the department under s. NR 538.08(6).





Questions?

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