

North Carolina Department of Environment and Natural Resources

Dexter R. Matthews, Director

Division of Waste Management

Michael F. Easley, Governor William G. Ross Jr., Secretary

MEMORANDUM

Re: Evaluation of Groundwater Protection Standards for the Solid Waste Section

Date: April 4, 2007

To: Jaclynne Drummond

Hydrogeologist

Field Operations Branch Solid Waste Section

From: Hanna Assefa

Environmental Toxicologist Division of Waste Management

Please note the review process and the groundwater protection numbers for the Solid Waste Section.

- 1. Determining the methodology for the derivation of these concentrations.
- 2. Determining if the methodology for the derivation of these concentrations meets the Solid Waste Rules.
- 3. Determining how the methodology for the derivation of these concentrations differs from that of the North Carolina Groundwater Standards.
- 4. Determining if the reference dose and slope factor that are the basis of these concentration are the most current available.

Methodology for the Derivation of the Groundwater Protection Std.

- The groundwater protection standards used by the NC Solid Waste Section are the same as the North Carolina Public Health Goals (NCPHGS). NCPHGS are used by the NC Division of Public Health to determine safety of private wells. NCPHGs are calculated using criteria 1 and 2 of the North Carolina Groundwater standards. They do not consider taste, odor, MCLs, MCLG, and secondary drinking water standards. NCPHGs are strictly health based.
- According to the rules groundwater protection standards are calculated only if there is no 2L standard.

- NCPHGs are based on a 1.0E-06 risk for carcinogens and a hazard quotient of 1 for non-carcinogens.
- NCPHGs are updated annually by the NC Division of Public Health.
- If the NCPHG is less than the practical quantitation limit any detection above the practical quantitation limit is considered unsafe.

Does Methodology for Derivation of Groundwater Protection Standards Meet Solid Waste Rules?

• If the intent of the rules are to prescribe health based numbers for drinking water that are derived in a similar manner to 2L standards, it does.

Is the Methodology for the Derivation of Groundwater Protection Standards exactly the same as that used to derive the North Carolina 2L standards?

• Yes with the exception that taste, odor, MCL, MCLG, and secondary drinking water standards are not considered.

	Recalculated GWP
Chemical (carcinogen)	Standard ug/l
Alpha bhc	0.006
Beta bhc	0.019
Total bhc	0.019
Benzo(a)anthracene	0.048
Benzo(a)pyrene	0.0048
Benzo(b)fluoranthene	0.048
Benzo(k)fluoranthene	0.48
4,4-DDD	0.14
4,4-DDT	0.1
1,1,1,2-Tetrachloroethane	1.3
1,1,2,2-Tetrachloroethane	0.17
1,1,2-Trichloroethane	0.6
1,2,3-Trichloropropane	0.018
Chemical (non-	Recalculated GWP
Chemical (non-carcinogen)	Recalculated GWP Standard ug/l
carcinogen)	
*	Standard ug/l
carcinogen) Acenapthylene	Standard ug/l 210
carcinogen) Acenapthylene Acetonitrile Acroelin	Standard ug/l 210 42
carcinogen) Acenapthylene Acetonitrile	Standard ug/l 210 42 3.5
carcinogen) Acenapthylene Acetonitrile Acroelin Antimony Benzo(g,h,i)perylene	Standard ug/l 210 42 3.5 1.4
carcinogen) Acenapthylene Acetonitrile Acroelin Antimony	Standard ug/l 210 42 3.5 1.4 210
carcinogen) Acenapthylene Acetonitrile Acroelin Antimony Benzo(g,h,i)perylene Benzyl Alchohol	Standard ug/l 210 42 3.5 1.4 210 3500
carcinogen) Acenapthylene Acetonitrile Acroelin Antimony Benzo(g,h,i)perylene Benzyl Alchohol Berylium	Standard ug/l 210 42 3.5 1.4 210 3500 4
carcinogen) Acenapthylene Acetonitrile Acroelin Antimony Benzo(g,h,i)perylene Benzyl Alchohol Berylium Thallium	Standard ug/l 210 42 3.5 1.4 210 3500 4 0.28
carcinogen) Acenapthylene Acetonitrile Acroelin Antimony Benzo(g,h,i)perylene Benzyl Alchohol Berylium Thallium 2,3,4,6-Tetrachlorophenol	Standard ug/l 210 42 3.5 1.4 210 3500 4 0.28 210
carcinogen) Acenapthylene Acetonitrile Acroelin Antimony Benzo(g,h,i)perylene Benzyl Alchohol Berylium Thallium 2,3,4,6-Tetrachlorophenol 2,4,5-Trichlorophenol	Standard ug/l 210 42 3.5 1.4 210 3500 4 0.28 210 350