Blue Ridge Environmental Defense League

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NCDENR Division of Waste Management
401 Oberlin Road - Suite 150
Raleigh, NC 27605

Re: Dry-cleaning Solvent Cleanup Act: 15A NCAC 2S .0501-.0509, 0101-.0102,.0401

Dear Mr. Powers:

On behalf of the Blue Ridge Environmental Defense League, I write to provide detailed comments and outline our recommendations regarding proposed changes to the rules now before the Environmental Management Commission.

Approval of the rules as drafted would create a loophole in the existing NC groundwater standards. It would establish a risk-based approach to assessment, prioritization and remediation under the Dry-cleaning Solvent Cleanup Act. The draft permits flawed methods of remediation. We are opposed to any technical or political methodology which allows soil and groundwater contaminated by dry-cleaning sites to remain untreated. Further, safe and economical alternatives for cleaning clothing are commercially available which do not use toxic perchloroethylene. We advocate the complete elimination of perchloroethylene as a dry cleaning solvent.

AUTHORITY TO EXTEND RISK-BASED APPROACH IS LACKING

Although NCGS 143-215.104D (b)(3) directs the Commission to adopt rules based on the risk-based approach, nowhere does the statute grant it the authority to exceed standards for health protection for properties adjacent to or otherwise away from dry-cleaning sites. The statute states: "All rules adopted by the Commission shall be applicable to all dry-cleaning facilities, wholesale distribution facilities, and abandoned dry-cleaning facilities in the State…." [NCGS 143-215.104D (c)] Adjacent landowners and off-site properties are not included in this list. The draft rule improperly expands this directive in its definition for solvent contamination sites. The draft rule states:

> "Contaminated site" or "site" means the area defined by the likely current and future location of the chemicals of concern from a facility or abandoned site. A contaminated site could be an entire property or facility, a defined area or portion of a facility or property or multiple facilities or properties. [15A NCAC 02S .0102 (7)]

The Dry-Cleaning Solvent Cleanup Fund was established specifically to provide revenue for the remediation of contaminated sites. May an adjacent or off-site landowner who is not a dry-cleaner whose property has been contaminated seek payment from this fund? No. May the owner of a so-called discovery site obtain payment from the Dry-Cleaning Solvent Cleanup Fund? No. May a so-called receptor obtain payment for his or her injuries caused by dry-cleaning solvent contamination? No. The statute provides that

claims be paid only in accordance with the provisions of Dry-Cleaning Solvent Cleanup Act of 1997. The DSCA does not permit the disbursement of funds to other than petitioners; i.e. potentially responsible parties who petition for certification of dry-cleaning facilities. Therefore, there can be no justification for the extension of the risk-based program to landowners who are not petitioners. To do so would constitute a taking without due process.

RISK ASSESSMENT UNDERMINES PUBLIC HEALTH

The need for the rulemaking as stated in the NC Register is "to provide the Dry-Cleaning Solvent Cleanup Act Program with a framework to establish appropriate cleanup goals for each site, perform cost-effective remediation, and issue 'no further' action status to sites while protecting human health, safety and the environment."

The stated purpose of the proposed rule is to establish a "risk-based corrective action approach for assessment and remediation of contamination at certified dry-cleaning facilities or abandoned sites." 15A NCAC 2S.0501

The risk-based approach would create a series of three steps "or tiers" through which the Division would establish a basis for action. But the three-tiered risk assessment is merely a tactic to circumvent the existing groundwater standards.

Tier 1 is based on "precalculated chemical-specific risk-based screening levels." [15A NCAC 02S .0506 (c)] The first tier contains screening levels for toxic chemicals associated with soil and groundwater contamination at dry-cleaning operations. Adoption of "precalculated chemical-specific risk-based screening levels" would develop into both the screening levels for Tier 1 and cleanup goal because if the chemicals of concerns are below these levels no further action would be required. The proposed adoption of "risk-based screening levels" *per se* would create a new state standard for groundwater contamination, apart from the existing standards established under 15A NCAC 2L.

Tier 2 allows the creation of site-specific target levels for pollution if Tier 1 precalculated chemical-specific risk-based screening levels cannot be met. A Tier 2 risk-assessment allows the use of "completed exposure pathways" [15A NCAC 02S .0102 (6)] to determine if a person living off site would be poisoned. "Site-specific target levels" would allow exposure to carcinogenic chemicals 1×10^{-5}; that is, ten times higher than one-in-a-million cancer deaths which form the basis for current rules.

The proposed Tiered Risk Assessment would allow a contaminated dry-cleaner site to exceed 2L standards; site-specific standards would be the rule and the North Carolina groundwater standard would become optional. The proposed rule states:

> If the concentrations exceed the risk-based screening levels, the Division may require remediation of the site to risk-based screening levels or the performance of a Tier 2 risk assessment to establish site-specific levels. (emphasis added) [15A NCAC 02S .0506 (c)]

Tier 3 risk-assessments utilize "alternative site-specific target levels" which are yet higher than Tier 2. A Tier 3 risk-assessment allows the use of alternative data, alternative models for transport and "technically defensible toxicity factors." [15A NCAC 02S .0506 (e)] What the draft rule means by "technically defensible" in this context is uncertain but it appears to throw open the door to substandard data. This is unacceptable.

No-further-action criteria can be met if either risk-based screening levels or site-specific target levels of contamination remain at a site.

Regarding soil contamination, the surficial soil levels in the precalculated chemical-specific risk-based screening levels are higher than comparable US Environmental Protection Agency Preliminary Remediation Goals (PRGs) developed for Superfund sites under CERCLA. A side by side comparison of these data indicate that EPA PRGs are, on average, 28% of the proposed 2S .0506 standards for toxic compounds including carbon tetrachloride 7%, perchloroethylene 53%, tricloroethylene 4.5% and vinyl chloride 24%; that is, the EPA Superfund soil cleanup goals are from 2 to 20 times as restrictive as the proposed North Carolina dry-cleaning solvent cleanup Tier 1 screening levels. The draft 2S levels cannot be justified.

RISK-BASED APPROACH CONTRARY TO OTHER REGULATIONS

The risk-based approach contravenes 15A NCAC 2L which is quite clear as to the scope and intent of state groundwater standards:

> 15A NCAC 2L .0101 (b) These rules are applicable to all activities or actions, intentional or accidental, which contribute to the degradation of groundwater quality, regardless of any permit issued by a governmental agency authorizing such action or activity…
>
> 15A NCAC 2L .0103 (b) It is the intention of the Commission to protect all groundwaters to a level of quality at least as high as that required under the standards established in Rule .0202 of this Subchapter.

Further, the 2L standards contain ample provisions—including monitoring, special orders, variances etc.—which would provide for remediation of the contaminated sites identified by the DSCA.

> **15A NCAC 02L .0104 RESTRICTED DESIGNATION (RS)**
> (a) The RS designation serves as a warning that groundwater so designated may not be suitable for use as a drinking water supply without treatment. The designation is temporary and will be removed by the Director upon a determination that the quality of the groundwater so designated has been restored to the level of the applicable standards or when the groundwaters have been reclassified by the Commission. The Director is authorized to designate GA or GSA groundwaters as RS under any of the following circumstances:
> (1) Where, as a result of man's activities, groundwaters have been contaminated and the Director has approved a corrective action plan, or termination of corrective action, that will not result in the immediate restoration of such groundwaters to the standards established under this Subchapter.
> (2) Where a statutory variance has been granted as provided in Rule .0113 of this Subchapter.

Most importantly, in the event of serious contamination, existing 2L rules call for corrective action to restore groundwater to the health-based standard embodied in the specific groundwater contamination limits listed in 15A NCAC 2L .0202:

> **15A NCAC 02L .0106 CORRECTIVE ACTION**
> (a) Where groundwater quality has been degraded, the goal of any required corrective action shall be restoration to the level of the standards, or as closely thereto as is economically and technologically feasible.

We recommend that risk-based screening levels conform to EPA preliminary remediation goals for soils and NC 2L standards for groundwater. The Commission should not allow the dry-cleaning remediation program to undermine 2L standards.

RISK-BASED RULE WRONGLY PERMITS NATURAL ATTENUATION

The risk-based remediation approach is based on a faulty premise which predicts that organic processes will ameliorate and eliminate soil and groundwater pollution. The draft rule states that "monitored natural attenuation of chemicals of concern may be approved as an acceptable remediation method." [15A NCAC 02S .0507(d)] There is neither basis in the statute nor sound technical merit for this contention.

Dry cleaning solvent, perchloroethylene (tetrachloroethylene), biodegrades slowly. Its breakdown products include some compounds which are more toxic. Some are known human carcinogens. These breakdown products include vinyl chloride in water and carbonyl chloride (phosgene) in air. (a) The following is excerpt from a peer-reviewed study of solvents in methanogenic conditions: (b)

> Widespread contamination of groundwater by halogenated compounds (12) has led to investigations to determine their fate in the environment. Previous studies have illustrated that a potential exists for their biotransformation under anaerobic conditions that are conducive to methanogenesis. Field studies with reclaimed wastewater injected into an aquifer indicated that trihalomethanes were transformed with half-lives of 30 days and tetrachloroethylene (PCE), trichloroethylene (TCE), and 1,1,1-trichloroethane were transformed with half-lives of 300 days (10). This was confirmed in laboratory studies. The biotransformation of PCE by a mixed methanogenic culture supported by continuous feed of acetate as the primary source of organic carbon was demonstrated by Bouwer and McCarty (4). At elevated PCE levels, partial conversion to TCE was observed. In addition, Parsons et al. (8) demonstrated the formation of traces of dichloroethylene (DCE) isomers and vinyl chloride (VC) after the disappearance of PCE in mucks to which the latter had been added. Thus, the anaerobic biotransformation of PCE and TCE appears to be the result of reductive dehalogenation. However, research to date has not clearly demonstrated whether conversion of PCE to TCE, DCE, and VC is quantitative or whether this process can lead to the complete mineralization of these compounds.

The authors conclude:

> The conversion of VC to CO2 under methanogenic conditions is still speculative, however, and a more definitive study is still needed.

Biotransformation of perc in anaerobic conditions underground does occur but it is not a

suitable nor defensible method for a remediation program. The end point of natural attenuation cannot be relied upon to protect public health.

PRECAUTIONARY APPROACH TO REMEDIATION

As it stands, the Dry-cleaning Solvent Cleanup Act which authorizes the current rulemaking is being used as the vehicle for continued contamination of air, soil, water and clothing with toxic perchloroethylene. This system of regulation is an experiment; it is playing chemical roulette with our health. The people of North Carolina have the right to clean air and water. We should not be exposed to preventable risks to our health and well-being. The precautionary approach would be a practical step forward and would correct the failures of the current regulatory system.

Respectfully,

Louis Zeller

Cc: Delonda Alexander

References

a. *Toxicological Profile for Tetrachloroethylene*, US Dept. of Health & Human Services, ATSDR, February 18, 1992, citing Bouwer and McCarty 1982; Bouwer et al 1981; Sasaki 1978; Wakeham et al 1983.
b. *Biotransformation of tetrachloroethylene to trichloroethylene, dichloroethylene, vinyl chloride, and carbon dioxide under methanogenic conditions*, T M Vogel and P L McCarty, Appl Environ Microbiol. 1985 May; 49(5): 1080-1083