

BLUE RIDGE ENVIRONMENTAL DEFENSE LEAGUE
PO Box 88
Glendale Springs, North Carolina 28629
Phone (336) 982-2691 Fax (336) 982-2954
BREDL@skybest.com, www.BREDL.org

February 10, 2003

Marion E. Deerhake
Air Quality Committee Chair
NC Environmental Management Commission
1617 Mail Service Center
Raleigh, NC 27699-1617

Re: Acceptable Ambient Levels for Hydrogen Sulfide, H₂S, CAS No.
7783-06-4

Dear Chairwoman Deerhake:

On behalf of the Blue Ridge Environmental Defense League, I write to request that the Environmental Management Commission set hydrogen sulfide levels at the lowest possible level for the protection of public health under the NC Toxic Air Pollutant rules. We recommend that the Commission adopt the lowest exposure level recommended by the NC Science Advisory Board:

0.023 ppm (23 micrograms per cubic meter) for both the 24-hour average and for 1-hour average acceptable ambient level, or AAL.

North Carolina air toxic regulations currently regulate hydrogen sulfide as a 1-hour acute irritant with an AAL of 2.1 mg/m³, or 2100 ppb. However, hydrogen sulfide presents serious risks to public health both from lone facilities and from multiple facilities in a given area. For the last four years we have conducted an investigation of asphalt industry facilities in the Milford Hills neighborhood of Salisbury, NC. This community is host to several H₂S-emitting facilities including asphalt storage, blending, and testing facilities, and a hot mix asphalt plant. Hydrogen sulfide is emitted from all these facilities.

Asphalt storage facilities are listed in the U.S. EPA's hydrogen sulfide emissions report to Congress (Report to Congress on Hydrogen Sulfide Air Emissions Associated with the Extraction of Oil and Natural Gas, October 1993, EPA OAQP&S, EPA-453/R-93-045). Stack testing required by NC DENR at an asphalt liquid binder plant found that levels of hydrogen sulfide were 2400 ppm (Letter to Winston Smith, EPA IV, from Dr. Richard Weisler, June 23, 2002).

The NC DAQ Air Toxics Analytical Support Team found emissions of hydrogen sulfide from the Associated Asphalt distribution terminal to be 0.3 pounds/hour from a storage tank vent, 0.000017 pounds/hour from truck load-out vent, and 0.0061 pounds/hour from a single railcar and 0.11 pounds/hour from an 18 car shipment. (ATAST Investigation No. 01007 And 01008, April 30, 2002) The same ATAST study estimates that the nearby APAC hot-mix asphalt plant, typical of the 140+ asphalt plant located across the state, emits hydrogen sulfide at 0.7 pounds/hour. Material Safety Data Sheets for asphalt plants list hydrogen sulfide as a hazardous ingredient of common hot mix asphalt (<http://www.graniterock.com/products/msds/hotmixasphalt.htm>)

As you know, many other sources of hydrogen sulfide exist in North Carolina:

intensive swine operations, slaughterhouses and rendering plants, paper and pulp mills, municipal waste landfills, and sewage treatment plants.

As we have observed in Salisbury and elsewhere, many communities are situated within short range of more than one type of facility. Hydrogen sulfide is one of the most common toxic air pollutants. North Carolina must take multiple facilities into account by setting lower, more conservative ambient limits.

Two syndromes may be identified as causing the symptoms reported by residents living near hydrogen sulfide sources:

1) Recent medical research reveals that permanent central nervous system damage may occur at levels of H₂S exposure found at common industrial facilities such as intensive livestock operations and asphalt industry sites (Legator, Marvin S, and Chantele Singleton: 1997: Panel on Hydrogen Sulfide, American Public Health Association's annual meetings, November 11, 1997, Indianapolis, IN.)

2) Noxious odors alone can cause serious and debilitating injury. Research at Duke University found that people who live or work around foul odors often become depressed and irritable; the olfactory region of the brain is closely linked to the limbic system, the area that governs emotions. Schiffman, S.S. & Nagle, H.T. Effect of environmental pollutants on taste and smell. *Otolaryngology - Head & Neck Surgery* 106: 693-700, 1992

Reliance on odor regulations for control of hydrogen sulfide would not be protective of public health. The well-intentioned Control and Prohibition of Odorous Emissions (15A NCAC 2D.1806) is a flawed rule with virtually no enforcement. The requirement for determination of an "objectionable odor" under 2D.1806 is that it shall be done by 1) a determination by DAQ Staff with a site visit determines, 2) an epidemiological study submitted to DAQ regarding the facility's emissions, or 3) a report from the state health director on the facility in question. The part of the rule which allowed "substantive complaints" from households to be used for enforcement was eliminated a few years ago. We believe that 2D.1806 creates a bureaucratic bottleneck which requires enforcement to rely on limited inspection resources of the Division, a scientific study of each potentially objectionable odor-causing facility, or the particular attention of the state health director. Moreover, the SAB reports that "virtually everyone could detect H₂S at 200 ppb," a level which is far less protective of public health than the recommended AAL (JJH 10/2/01). Of course, the rule before the EMC today is not the odor rule; we raise this issue to show that the toxic air pollutant standards are the only effective rules which we may depend on to control hydrogen sulfide emissions.

Lower levels of hydrogen sulfide are now known to cause serious health effects. The NC SAB reports that "symptoms such as headache, nausea and eye and throat irritation" are found in communities with ambient levels "as low as 7 to 10 ppb" associated with periodic fluctuations at higher levels (JJH 10/2/01). What's more, hydrogen sulfide levels may be elevated in cooler seasons and at night when the gas tends to remain at ground level.

"Public health scientists now recognize that hydrogen sulfide is a potent neurotoxin, and that chronic exposure to even low ambient levels causes irreversible damage to the brain and central nervous system. Children are among the most susceptible to this poison gas. It is unacceptable for communities to have to continue suffering the ill effects of H₂S when the technology to control H₂S emissions is available and affordable." Neil Carman, Ph.D., former Texas environmental official and clean air director for the Lone Star Chapter of the Sierra Club.

We think the most reasonable course for the Environmental Management Commission is to heed the recommendation of the Science Advisory Board and designate the new hydrogen sulfide AAL at 0.023 ppm for both acute and long-term periods.

I plan to attend the Air Quality Committee meeting on Wednesday, February 12th. If possible, I would like to have the opportunity to deliver brief remarks on this agenda item. I would bring up issues which no other representative will address.

Thank you for all you do for North Carolina.

Respectfully submitted,

Louis Zeller
Clean Air Campaign Coordinator
Blue Ridge Environmental Defense League
PO Box 88
Glendale Springs, NC 28629
(336) 982-2691
BREDL@skybest.com