

Blue Ridge Environmental Defense League

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HYDROGEN SULFIDE (H₂S)

Hydrogen sulfide is one of the most common toxic air pollutants. In North Carolina alone about 12 million pounds of this toxic gas are released into the air annually. Hydrogen sulfide is recognizable by its distinctive rotten egg odor. Hydrogen sulfide, H₂S, is formed by the breakdown of organic materials and is typically found near agricultural locations, waste treatment plants and industrial sites. Many sources of hydrogen sulfide exist: intensive swine operations, paper and pulp mills, asphalt plants, slaughterhouses and rendering plants, municipal waste landfills, and sewage treatment plants.

The NC Division of Air Quality estimates that the typical hot-mix asphalt plant emits hydrogen sulfide at 0.7 pounds/hour. There are about 140 asphalt plants located across the state, and about 3,600 plants in the United States.



A hand painted yard sign at the home of Edith MacDowell who lives next to a Rhodes Brothers asphalt plant.

Over the last five years very rare childhood brain cancers have been occurring at rates 11 times than expected in three census tracts near asphalt plants and untreated groundwater contaminated sites in the Milford Hills community of Salisbury. Children are more vulnerable than adults to hydrogen sulfide, first because they breathe more rapidly, taking in significantly more pollution per pound of body weight than do adults. A resting infant, for example, inhales twice as much, relative to its size, as does a resting adult. Second, national data show that children spend an average of about 50% more time outdoors than adults. Third, children are three times more active while outdoors than, engaged in sports and other vigorous activities; this increased activity raises breathing rates and significantly increases inhalation and in some cases swallowing of pollutants. Fourth, children are particularly to toxic substances because their bodies are immature and rapidly growing. Fifth, children are in their prime learning years and H₂S exposure causes brain damage. The impairment of mental faculties in a child amounts to a lifetime of harm.

Other health problems near Asphalt Industry – Heart diseases, stroke, asthma, diabetes, and thyroid diseases are of great concern because of the types of contamination. Several neighbors in the small community of Milford Hills were diagnosed with multiple myeloma. Rates of cancers of the lung, pancreas and blood system also appear to be increased.

BREDL took an initiative by providing information regarding Hydrogen Sulfide limits for the Division of Air Quality rulemakings. BREDL recommend that the Environmental Management Commission (EMC):

- 1. Adopt the lowest exposure level recommended by the independent NC Science Advisory Board, Option 1 under 2D .1104, which is 33 micrograms per cubic meter (g/m³) for the 24-hour acceptable ambient level, or AAL;*
- 2. Reject the less stringent AALs proposed under Options 2, 3, 4, and 5 for 2D .1104;*
- 3. Reject the exemptions for wastewater treatment systems at pulp and paper mills proposed under Options A and B of 2Q .0702;*
- 4. Reject the exemption from toxic air pollutant procedures for facility modifications resulting in air pollution increases from so-called insignificant activities of 2Q .0706;*
- 5. Adopt the lowest toxic permit emission rate (TPER) of 0.46 pounds/day and 0.013 pounds/hour, Option 2 under 2Q .0711;*
- 6. Reject both proposed new procedures, Option A and Option B, which would apply only to exempted wastewater treatment at pulp and paper mills under 2Q .0714.*

In addition to the above steps, BREDL recommend that the Environmental Management Commission:

- 7. Take the SAB recommendation one step further and adopt the hydrogen sulfide 33 micrograms per cubic meter (g/m³) standard as a 1-hour AAL under 2D .1104;*
- 8. Eliminate the exemption for hydrogen sulfide and all toxic air pollutant limits for all industrial and municipal waste water treatment facilities;*
- 9. Eliminate the exemptions for hydrogen sulfide and all toxic air pollutant limits for intensive livestock operation waste lagoons.*

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. The negative impact of this pollutant on our most vulnerable citizens, especially for children, requires the EMC to adopt the strictest standards achievable with conventional pollution control measures for all sources of hydrogen sulfide. Hydrogen sulfide's critical role in the human body's neurological functioning must be accounted for in the EMC's deliberations. The fact that hydrogen sulfide is naturally present in the human body is precisely the reason why it is such a pernicious and dangerous pollutant in the air.