STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

SUPERVISOR OF WELLS INSTRUCTION 1-2001

Nuisance Odor Standard for Hydrogen Sulfide at Wells and Surface Facilities

Purpose

Part 615, Supervisor of Wells, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, and administrative rules promulgated thereunder, prohibit emission of gas from a well or surface facilities in quantities that cause the unnecessary endangerment of public health, safety, or welfare. The purpose of Supervisor of Wells Instruction 1-2001 is to define the concentration of hydrogen sulfide (H_2S) in ambient air at the point of exposure that may cause injurious effects to human health.

Background

Rule 324.103 defines "nuisance odor" as follows:

> Nuisance odor means an emission of any gas, vapor, fume, or mist, or combination thereof, from a well or its associated surface facilities, in whatever quantities, that causes, either alone or in reaction with other air contaminants, injurious effects to human health or safety; unreasonable injurious effects to animal life, plant life of significant value, or property; or unreasonable interference with the comfortable enjoyment of life or property.

Rule 324.1013 prohibits nuisance odors:

> A person shall not cause a nuisance odor in the exploration for, or in the development, production, handling, or use of, oil, gas, or brine or in the handling of any product associated with the exploration, development, production, or use of oil, gas, or brine.

Rule 324.1129(2) provides for a procedure for determining whether a nuisance odor exists at a well or surface facility that produces H_2S:

> If a well or its associated surface facilities produce hydrogen sulfide and the supervisor or authorized representative of the supervisor receives 1 or more complaints of odor regarding the facility, then the supervisor may require the permittee of a well to perform numerical modeling to determine the concentration of hydrogen sulfide in the ambient air. Numerical modeling shall utilize the distance from the potential point of an uncontrolled release of gas at the well or its associated surface facilities to the closest existing structure used for public or private occupancy, existing area maintained for public recreation, or the edge of the traveled portion of an existing interstate, United States, or state highway. A permittee shall have the opportunity to provide, in addition to the numerical modeling, actual measurements of the concentration of hydrogen sulfide in the ambient air taken at the closest existing structure used for public or private occupancy, existing area maintained for public recreation, or the edge of the traveled portion of an existing interstate, United States, or state highway. The supervisor or authorized representative of the supervisor may determine a nuisance odor exists based on all applicable information. The supervisor or authorized representative of the supervisor may require appropriate emission control measures consistent with the provisions of this rule and R 324.1101 to R 324.1128. If emission control measures are required, then the permittee shall

submit, within 30 days of being determined to be necessary by the supervisor, for the approval of the supervisor or authorized representative of the supervisor, a timetable for the installation of any equipment required.

While Rule 324.1129(2) sets forth the procedure for determining the H_2S concentrations in the ambient air, neither this rule nor other rules promulgated under Part 615 establish a numerical standard for H_2S concentrations for which the Supervisor of Wells (Supervisor) may determine a nuisance odor exists.

There is ample information on the health effects of acute exposure to high concentrations of H_2S. However, there has been very little sound guidance available on the effects of longer-term, low-level exposure. As a result, Governor John Engler requested the Michigan Environmental Science Board (MESB) to review the effects of low-level H_2S exposure and to recommend a level in ambient air that can be considered safe for human health. In August 2000 the MESB issued its report, entitled "Health Effects of Low-Level Hydrogen Sulfide in Ambient Air."

Based on the recommendations of the MESB report, I find that a sixty-minute time-weighted average of 0.2 parts per million (ppm) of H_2S in the ambient air at the closest existing structure used for public or private occupancy, existing area maintained for public recreation, or the edge of the traveled portion of an existing interstate, United States, or state highway constitutes an effective standard for determining whether a nuisance odor exists.

Instruction

This Instruction is issued in accordance with the provisions of Rule 324.103, Rule 324.1013, and Rule 324.1129(2) promulgated pursuant to Part 615.

After the effective date of this Instruction, if the Supervisor or authorized representative of the Supervisor finds, in accordance with the requirements of Rule 324.1129(2), that the concentration of H_2S attributable to a well, or its associated surface facilities regulated under Part 615, exceeds 0.2 ppm on a sixty-minute time-weighted average basis in the ambient air at the closest existing structure used for public or private occupancy, existing area maintained for public recreation, or the edge of the traveled portion of an existing interstate, United States, or state highway, then the Supervisor shall determine that a nuisance odor exists that may cause injurious effects to human health, and the Supervisor may require appropriate emission control measures consistent with the provisions of Rule 324.1101 to Rule 324.1130.

A determination by the Supervisor or authorized representative of the Supervisor that the H_2S concentration in ambient air, as determined above, is 0.2 ppm or less on a sixty-minute time-weighted average basis does not preclude the Supervisor from determining a nuisance odor exists that may cause unreasonable interference with the comfortable enjoyment of life or property, and requiring the permittee of the well to implement appropriate emission control measures consistent with the provisions of Rule 324.1101 to Rule 324.1130.

This Instruction is effective immediately.

Date: 3/22/01

Russell J. Harding
Supervisor of Wells