DEQ data show unreported toxic chemicals in air

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Massive amounts of unreported toxic chemicals are going into Louisiana's air from the state's hundreds of natural gas dehydration facilities, according to data just gathered by the Department of Environmental Quality.

The amount of benzene, a cancer-causing agent, being released by these plants appears to be many times the total amount of benzene that was reported in the state's last toxics inventory, DEQ air officials say.

In fact, the amount of toxics being released by these plants could substantially raise the total toxic discharges reported by Louisiana to the federal government last year, based on the preliminary figures gathered, says Mike McDaniel, DEQ's assistant secretary in charge of air and nuclear matters. Tens of millions of pounds appear to be involved.

Louisiana already ranks third in the nation in toxic chemical discharges to the air, but officials were unaware when those numbers were compiled that numerous natural gas facilities were major sources of emissions.

Industry also was "shocked" to find out about the emissions and is cooperating with the state fully in trying to remedy the situation, says Mike Lyons of Mid-Continent Oil and Gas Association.

Not enough information has been gathered yet to make a better estimate of the amount of toxics being emitted by such sites, according to members of DEQ's air staff, but they say it obviously is a major problem that has long gone unnoticed.

One of the immediate concerns is determining the extent to which workers at these plants have been and are being exposed, says Tom

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"It's premature to speculate in that area," says Lyons of Mid-Continent. "Of course, benzene is of concern and it certainly warrants regulatory attention."

The one positive side of the situation, according to McDaniel, is that the problem can be corrected fairly easily, with the aromatic chemicals being captured and sold as valuable products.

Some sites would be able to recapture and sell 2,000 barrels a year of these materials, which include benzene, ethylbenzene, xylene and toluene, says Gus Von Bodungen, who heads DEQ's air division.

In some cases there may be recovery, but it is not clear how much and whether it will be worth the effort in every case, Lyons says.

Currently the materials are being emitted to the air from glycol dehydrators used to dry natural gas. Glycol is used to remove the water from gas; but, apparently unknown to those involved in the process, glycol has not only been removing water from the natural gas, but removing benzene and other aromatic compounds as well.

In the reboiler, the water is separated from the glycol, so the glycol can be routed through the system again, but the benzene and other toxics also are being liberated and released to the air with the steam.

Initial computations indicate 90 percent or more of these aromatics can be recaptured by cooling, according to members of the DEQ technical staff.

The problem was apparently discovered by a DEQ staff member who kept noticing the emissions from one of these units and began to suspect it was more than just steam, according to McDaniel. A test confirmed the staff member's fears and he showed the results to McDaniel.

Subsequently, tests have been run at several other sites, confirming that the problem is widespread, according to DEQ documents. The data indicate, however, that the amount and types of contaminants picked up and emitted varies with the natural gas stream and the type of glycol being used.

A preliminary survey by DEQ indicates 70 percent of the state's natural gas plants use glycol dehydration.

"If the limited test results we have seen are typical, there is a potential for a number of facilities to become reclassified as major sources (100 tons per year) of hydrocarbons," according to a DEQ document. "This can result in possible elevated exposure to workers and the general public."

DEQ has asked operators of glycol dehydrators to determine the amount of benzene and other aromatics they are losing to the atmosphere.

While many of the facilities have air discharge permits, those permits are only based on items at the site such as compressors which were known to emit pollutants. Apparently the agency has never before looked at the dehydrators as emission sources, since it was thought they were only releasing steam, McDaniel says.

In addition to the emission of toxics, McDaniel also is interested in the impact the facilities may be having on ozone formation in some areas of the state.

"We need to locate and quantify each of these sources without delay," McDaniel says in his correspondence with the dehydrator operators.

Though the surveyed plants have been shown to release several toxic chemicals, the one of most concern to DEQ officials is benzene.

Benzene usually enters the body through inhalation of vapors, though it can also penetrate the skin. Acute poisoning is rare and the symptoms of chronic poisoning are vague, including "fatigue, headache, dizziness, nausea and loss of appetite, loss of weight and weakness" in early stages, according to "Dangerous Properties of Industrial Materials" by N. Irving Sax.

However, the major concern about long-term exposure to low-levels of benzene is that the chemical has been linked to leukemia.