Arsenic And Old Lakes

60-year-old Toxic Problem Comes to Head With $10 Million Fine

by Allison Seale

The old saying, "What you don't know can't hurt you" and its successor, "If you ignore it long enough, the problem will go away," are two fallacies that are coming back to haunt the Brazos Valley.

Years ago, before Big Brother was looking out for us, industry operated without the numerous health and safety regulations that today are standard. Such was the case for Cotton Poisons, Inc., a company that produced an arsenic-based cotton defoliant in the late Thirties and early Forties near downtown Bryan.

What You Don't Know Can Hurt You

In the old days, trains carrying arsenic would unload on the tracks bordering the east side of the plant. The arsenic would then be moved into the plant by a sometimes sloppy conveyor system and the empty railroad cars washed out. Storm water run-off from the plant area, wastewater from the plant, plus any spillage and wash-down water flowed into two unlined retention ponds. The pond sediment trapped the majority of the arsenic solids, and the remaining solution was dumped into Finfeather Lake. For years, neither common sense nor regulations set up any safety requirements for operating such retention ponds. Amazingly, such regulations wouldn't become law until around 1983.

The first recorded instance of any regulation of operations at the Bryan plant wouldn't come until 1969, according to the Texas Water Commission (TWC). By then, the company had been purchased and had undergone two name changes to become the Pennwalt Corporation. The TWC's predecessor, the Texas Water Quality Board (TWQB), inspected the plant and found the concentration of arsenic in Finfeather Lake to be approximately 10 milligrams per liter (mg/l). Ironically, the information had little public impact, since no "safe" levels for arsenic had yet been established. The Environmental Protection Agency would not even be established for another year, and it would be some five years before the EPA would set recommendations on maximum levels of toxic chemicals in water. But based on the levels that would eventually be established, the level of arsenic in Finfeather Lake was roughly 50 times higher than the EPA's maximum for dissolved arsenic concentration in water.

Don't Ignore It, and It Still Won't Go Away

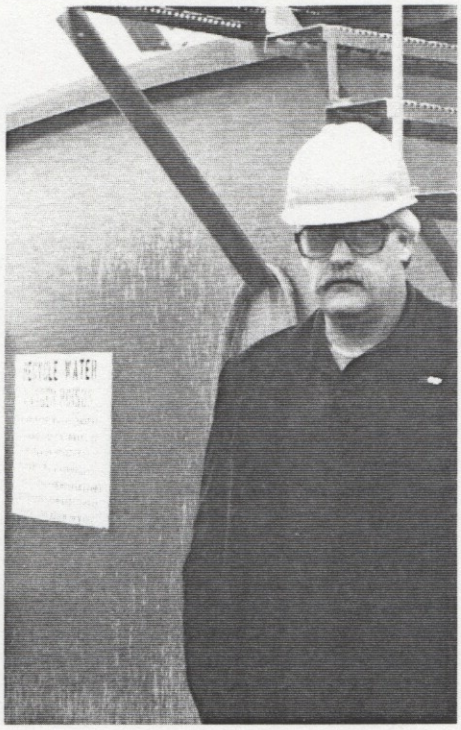
As more became known about the hazards of toxic chemicals and their impact on the environment, more regulations started to make their appearance. In 1976, Pennwalt was ordered by the TWQB and the Attorney General's office to perform a long laundry list of corrective measures: close and eliminate the retention ponds which stored arsenic sludge and wastewaters, provide a wastewater recycle system, stop discharge or seepage of arsenic-contaminated sediments exceeding 10 milligrams per kilogram (mg/kg) of arsenic into Finfeather and Municipal Lakes, dispose of arsenic-laden sediments in a landfill to be constructed on the plant site, drain Municipal and Finfeather Lakes, and prevent drainage and runoff waters from entering the lakes.

By 1980, Pennwalt had accomplished the task of removing the arsenic-contaminated

sediments from Finfeather and Municipal Lakes and, in 1981, the Texas Water Commission allowed Pennwalt to refill the lakes. Among other things, the TWC also required that the company remediate any ground waters found to be significantly contaminated. (Remediate is toxic-spill speak for restoring to natural state; the root word is remedy.) Refilling of the lakes took place in 1983.

But only eight years later, a TWC-initiated study of Finfeather and Bryan Municipal Lakes revealed surface water in Finfeather Lake had arsenic at levels as much as 26 times the EPA's maximum concentration limit for arsenic in drinking water, while Municipal Lake showed concentrations 12 times higher. Arsenic levels in sediment taken from Municipal Lake was as much as 68 times the maximum level (10 mg/kg) originally called for by the TWC in 1976; Finfeather Lake showed levels 21 times the maximum.

In addition to the recurring problem of ground water contamination, the Texas Air Control Board identified several areas in and around the Pennwalt property where topsoils needed to be cleaned or replaced. It also required the company to pave portions of the facility to prevent the potential for air contamination from vehicles kicking up dirt while leaving the plant. But before they could pave the area, six inches of road bed had to be removed. This was completed in the summer of 1989.



Arthur Chernosky, Elf Atochem plant and manufacturing manager, stands beside the recycled water storage tank that is part of the plant's zero-discharge compliance.

In the fall of that year, Atochem North America, the chemical arm of the French national oil company (now, Elf Atochem), inherited the arsenic albatross when it purchased the plant from the Pennwalt Corporation — for better and for worse.

For Worse, Not Better

For better, the herbicides, insecticides, fungicides and cotton defoliants have a ready-made market in the fertile farmlands of the Brazos Valley. The company employs between 60 and 90 area residents, depending on the seasonal demand for the agricultural products produced by the plant, and it achieved sales in excess of $30 million last year, according to Arthur Chernosky, manufacturing and plant manager for Elf Atochem and, previously, for Pennwalt.

The arsenic-related products are used in a variety of industrial and agricultural applications, including cotton defoliants, glass manufacturing, and veterinary medicine. In addition, arsenic acid is used in poultry feed additives and for wood preservatives.

But gone are the days of unregulated industry. And while the general public may not know much more about arsenic than its nefarious role in a 1930s Hollywood film that starred Cary Grant, science and technology have come much further along. Arsenic, says K.C. Donnelly, a toxicolo-

gist at Texas A&M University, is one of a very few chemicals for which there is enough data to classify it as a human carcinogen. Chronic exposure to arsenic is associated with an increased risk of skin cancer, while inhaled arsenic increases the risk of lung cancer. Other health risks from less severe exposure to arsenic have resulted in gastrointestinal irritation, vascular and skin lesions and anemia. Because of these risks, the EPA has set standards for water quality with concern to arsenic, among other chemicals, and the TWC has the task of ensuring that waters within our borders meet those standards.

So for worse, Elf Atochem now has the responsibility of not only dealing with the disposal of arsenic wastes produced at the plant now, but also to remedy the damage done by the haphazard, though considered the norm at the time, arsenic waste disposal of the past.

"Sale of a company," Bill Colbert, spokesperson for the Texas Water Commission said, "does not absolve anyone of response."

Previous to the sale of Pennwalt, the TWC had asked that the company submit a plan for removing soil and ground water contamination at and around the plant. That plan was submitted in May of 1989.

The TWC wanted to know why, with a wastewater recycling system in place, and after the lakes had been drained and the sediments removed and placed in a landfill, the lakes and associated tributaries leading from the plant to the lakes continued to show high levels of arsenic?

Pennwalt contended, as does Atochem, that the lakes and tributaries are being contaminated as a result of past practices, not present. More specifically, they point to ground water contamination under the plant as the primary contributor of arsenic to the waterways. The TWC agrees.

Three aquifers are located under the plant site. "The two retention ponds that were dug behind the facility were dug deep enough that they went into the upper aquifer," Chernosky said. "It (arsenic) seeped into ground water." For almost 40 years.

It's a scarey premise, but one that, unfortunately, appears to be true. During an October, 1989, inspection, the TWC collected a ground water sample from an upper aquifer at the plant that had alarmingly high levels of arsenic. The middle aquifer was also found to be contaminated with similar levels of arsenic. It should be noted that neither the cities of Bryan nor College Station uses water from these aquifers.

It all adds up to a costly problem for Atochem and the community because, with each rain, arsenic is carried into the aquifers, where it eventually finds its way into Municipal Lake. And while arsenic is only dangerous when ingested, inhaled or absorbed through the skin in high concentrations, the levels of arsenic that have been found in storm waters coming from the plant and in the lakes are far above EPA guidelines for safe drinking water. And some of the ground contamination sites, as with the waste pile created from the paving project, have shown levels of arsenic that would require it to be classified as hazardous waste material. Finally, water from Municipal Lake eventually finds its way into Burton and Carter Creeks and, ultimately, the Navasota River.

Dr. Richard Beauchamp, an environmental public health physician for the Texas Department of Health, notes that, while the arsenic is posing no immediate threat, it is still a potential human hazard.

"It's always a potential risk," Beauchamp said. He estimated that, at the levels of arsenic collected in a sample taken from a creek at Duncan Street, an average 10-year-old would have to ingest 2 to 16 ounces a day over a period of weeks or months to develop symptoms of arsenic poisoning. To be lethal, an adult would have to drink 64 ounces of the same sample in one sitting.

While it would be difficult, and even unlikely, for a child or adult to ingest such large amounts of the creek water that runs from the plant, it illustrates why the TWC is concerned.

"The longer you let it (contamination) continue, the more chance you have for an immediate health threat," Colbert said.

Arsenic Factoids

- Arsenic is the 50th most abundant element in the crust of the earth.
- Most foods contain some level of arsenic.
- The total daily intake of arsenic by humans without industrial exposure is usually less than 0.3 milligrams per day.
- 5.0 milligrams per liter is the EPA level established for arsenic to classify a sample as hazardous waste. The waste pile at the Atochem site had an average leachable concentration of 140 mg/l.
- .19 is the maximum concentration for dissolved arsenic concentration in fresh water as established by the EPA. Each sample taken between November 1989 and October 1990 from water runoff from the plant after a storm was in excess of this level.
- "I wouldn't hesitate to go down today, dip a glass of water into the lakes, boil it and drink it." — **Ed Ilschner**, director of public works for the City of Bryan.
- Though not likely, even if Atochem declared bankruptcy, the Bryan site would qualify for cleanup with monies from Superfund. The company would still be held liable for three times the amount of federal monies spent should Superfund be needed.
- Even if Elf Atochem halted production of products requiring arsenic (which make up 50 percent of their product mix), the company would still be required by the Texas Water Commission to remove arsenic from the surrounding soils and waters.
- "If the regulations that we have today had been in place in the 30s, we would not have the problems we have today." – **Arthur Chernosky**

A Fine Mess

The TWC is so concerned by the continued elevated levels of arsenic found in storm and ground waters that last month it recommended the company be fined $10 million. If the Texas Water Commission adopts the proposed penalty, it would be the highest administrative fine ever assessed.

The TWC feels that Atochem is not moving fast enough to remedy the problems associated with storm water drainage and ground water remediation and that the company has been negligent in its efforts to adequately protect the community from contamination. Colbert said that the company took steps to correct problems only when told to do so by the TWC. He points to the fact that the company failed to take such seemingly obvious steps as to place signs warning of the dangers of swimming or fishing in the contaminated creeks and lakes. In addition, even after the waste pile at the site had been classified as hazardous waste, the TWC contends that Atochem took no action to acquire a permit for its disposal. Furthermore, the TWC claims in its report, the pile was not properly secured and children had been seen playing on it.

"This is an extraordinary case

The day before the TWC issued its recommendation for the $10 million fine, the gates at this site were left open and unattended. It's an example of some of the problems the TWC found with Atochem's operations.

involving a large degree of environmental damage and a serious threat to public safety," Dan Eden, acting executive director of the TWC said. "Major corporations with substantial resources and an ethical conscience know what to do when confronted with information that demands prompt action to prevent a threat to their neighboring community."

The amount of the potential fine was calculated for each day that the company should have reasonably known about situations that required action and should have taken steps to correct them.

But Arthur Chernosky disagrees that his company has taken the problems lightly. He said the company has spent more than $6 million dollars over the past 10 years toward eradicating the contamination and has committed to spending another $20 million over the next 10 years. These monies, however, are mandated as part of an Agreed Order between Atochem and the TWC.

"This is a significant amount of money, but it's something that's necessary," Chernosky said. "We're committed to operating as environmentally sound as possible; we all live here."

Chernosky says that none of the arsenic contamination showing up in storm and ground water today is a result of present operations. He says the company has hazardous waste manifests that prove they have managed the wastes according to every applicable regulation. To help remedy the problems associated with the polluted aquifers, he says the company will have a ground water extraction and treatment system in place by July 1 that will bring the contaminated ground water to above drinking water standards. In addition, he said that by April 1, all rainwater that falls on site will be collected to ensure that no contamination goes outside the production site. Once again, these measures have been mandated by the TWC.

Based on the good working relationship that Atochem had shared with the TWC, Chernosky admits surprise over the magnitude of the fine. He wasn't, he said, so surprised that a fine had been recommended.

"A fine of this magnitude," he said, "will not speed up the work we are doing." Whether or not the TWC will accept the full recommendation of the $10 million fine, reduce it, or dismiss it altogether will not be known until April 1, when a hearing is scheduled on the matter in Austin.

The speculation arises: Would industry voluntarily take costly action to operate in an environmentally safe manner without the threat of Big Brother's administrative stick? Regardless, the contamination exists today, and it will not go away by itself. And we now know far too much about the potential risks to continue to ignore the problem. So it appears that Elf Atochem has the disadvantage of operating in a more enlightened age and that the arsenic albatross won't soon fall from around its neck. But then again, it took more than 50 years to create the mess it has become today.