

SALT PILES REMOVED — A power shovel and front end loader removed

the remains of the arsenic contaminated salt piles at the Ansul Co. in Mari-

—*Journal Photo by George P. Koshollek*
nette, Wis. The Menominee River is in the background.

Arsenic Leaves \$7 Million Hangover

By Paul G. Hayes

Journal Science Reporter

Sometime next month, a truck will drive into a covered building at the Ansul Co. in Marinette and take on a load of salt containing less than 1% arsenic. After loading, the truck will be brushed off and the load covered with a tarpaulin.

Then the truck will wind through Marinette's streets and onto Highway 41. It will rumble past Milwaukee and into Illinois. South of Chicago, it will dump its load, the last of 90,000 tons of arsenic laced industrial waste and, to date, a \$7 million headache for the Ansul Co.

For 18 months, as many as 20 truckloads a day have left the Ansul plant next to the Menominee River and headed toward a licensed Illinois landfill site. With the last truck next month, a pile of hazardous wastes that once measured 300 foot square and 30 feet high will be gone at last.

But the vestiges of the headache remain:

Arsenic has contaminated the soil near the plant.

Arsenic has contaminated the groundwater in the area to a depth of 40 feet.

Arsenic in the river sediments has delayed the Corps of Engineers' dredging of Marinette

harbor on Lake Michigan and the Menominee River to the Marinette Marine Co., a shipbuilder, upstream from Ansul.

Up to 30 tons of arsenic is moving into Green Bay each year with uncertain biological results, according to University of Wisconsin scientists.

For a time, arsenic was leaking from the soil into an old sanitary sewer and finding its way to Marinette's sewage treatment plant, where it was killing bacteria used in the treatment process. This forced the early replacement of the sewer by the city.

Arsenic, as any reader of whodunits knows,

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Tempo Steps Up Rapidly for Sudden Musical Celebrity

Arsenic

Contaminated Waste Is a Co

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is one of the world's oldest known poisons. Its killing power is believed to result from its combining with certain enzymes to interfere with metabolism. In addition, it is believed to cause cancer.

But, apparently, Ansul's arsenic wastes have not harmed any human. The company said regular urine tests of workers showed safe levels of the poison.

Nor have the wastes caused a lasting wound to the natural environment in the opinion of most of those involved in the case, although the jury is still out on this question. If they haven't, part of the reason was luck.

What the Ansul wastes demonstrate is the costliness and complexity of disposing of hazardous wastes in to-

day's age of heightened concern about chemical dangers.

Furthermore, they demonstrate the slipshod manner with which the chemical industry formerly disposed of its wastes. A more sober reminder recently bubbled to the surface at Niagara Falls, N.Y., where long buried wastes of the Hooker Chemical Co. are an immediate threat to human health.

Ansul began manufacturing two arsenical herbicides about 1960, according to Jack Nicholas, Ansul's environmental control manager. Mostly, they were shipped South for use on cotton crops. One was a specific weed killer. The other was used to defoliate the cotton plants to make cotton picking easier.

The manufacturing process produced sodium chloride and sodium sulfate, salts containing trace amounts of ar-

senic as wastes, he said. Originally, these were in liquid form.

"From 1960 through 1966," he said, "the waste stream went directly into the river. In 1966, with the realization that this practice should be stopped, we began accumulating salt. The change was voluntary."

For every gallon of arsenical herbicide produced, the company produced 11 pounds of the contaminated salt, and the company was selling millions of gallons of herbicide, he said. The pile next to the Menominee River began to grow.

DNR Consulted

Obviously, Ansul had to do something about it, Nicholas said. Ansul began studying the possibilities of recycling the wastes or disposing of them. Either way, Ansul probably had to have permis-

sion from the Wisconsin Department of Natural Resources.

So the DNR learned about the waste pile only when Ansul's representatives approached it in 1972. Since then, both the DNR and Ansul have been working closely together to get rid of the growing salt pile.

Atlantic Plan Rejected

At one point, Ansul contracted with a Michigan landfill operator to take the salt. According to the DNR, Ansul barged over one load of 7,500 tons and was ready to ship another when the Michigan dump lost its permit.

Then Ansul applied to the US Environmental Protection Agency for permission to dump the salt in the Atlantic Ocean. The DNR said the EPA denied the permits on grounds that that the salt was in solid form and held

Harvest

Threshers Return to the Fields

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22-65 (drawbar and belt horsepower) Case, which sold new in 1924 for \$2,500. I paid \$5,000 for it five years ago, and last year got an offer of \$11,000 for it."

Meals Were Banquets

Threshermen, an old saying had it, always died broke. Mudek, the club's immediate past secretary, had the rea-

Brezhnev Asks End to US Interference

Moscow, USSR —UPI— President Leonid Brezhnev says relations with the United States can develop only if the US stops interfering in internal Soviet affairs.

The official Tass news agency said Brezhnev discussed relations with the US in a weekend meeting with Armand Hammer, chairman of Occidental Petroleum.

son: Unpaid threshing bills especially during the Depression. His family's records indicate that farmers tried, however. One gave up his tractor to pay his bill.

"We had the most wonderful meals," recalled Harold Russell, an 85 year old retired farmer near here and the club's treasurer. "Every farm wife would try to outdo the other — roast beef, chicken, homegrown vegetables, always plenty of pie and cake."

"Every place we went, they put on a feast," said 67 year old Ivan Woodman, relaxing in a tavern at Avalon. "We worked hard but it was worth it. We knew our neighbors then. Now the combine operator works alone, goes straight through, eats while he is moving."

Orhan Osman Yirmibesh, operator of the Badger Farm Store at Avalon, said that recently he had facetiously

introduced two farmers, and found that they really didn't know each other — although they lived on adjoining farms. He bought a Beloit dealership in 1952, and sold 48 small combines for \$1,350 each in one year. Now the machines are bigger, the price is \$50,000, and most sales are at corn and soybean harvest time.

Maybe \$45 a Day

The price of today's combines — up to \$65,000 with grain and corn gathering heads, air conditioned cab and stereo — makes ownership impractical for a small farmer. He hires custom operators, at \$10 to \$12 an acre.

The threshermen of yesterday got about 3 cents a bushel — maybe \$45 a day to pay engineer, separator and the coal bill. And the field hands got \$1 a day, pitching bundles in the hot sun.

The thresheree, to recapture those old days, will start at 6:30 each morning, with a thresherman's sized breakfast. Threshing will begin at 8 or 9 a.m., depending on when the dew is off the grain, and will continue all day.

Admission is \$1.50 for adults, 50 cents for children 10 to 16. For \$2 you can camp on the grounds.

When you've got enough chaff and soot in your hair, there will be a flea market to visit, set up in the storage sheds. There will be antique displays, a daily parade at 2 p.m., a miniature train to ride, oldtime and modern music, steamed corn and other refreshments at stands run by the Barbershoppers, St. John Vianney Church and the Green Beret Drum and Bugle Corps. On Sunday, there is a church service at 10 a.m.

ostly Problem

trace contaminants of cadmium and selenium, toxic heavy metals.

Daniel Kolberg, DNR environmental engineer, said the DNR decided that land disposal in Wisconsin was not the solution. It ordered Ansul to study reprocessing the arsenic but in the meantime to upgrade its storage facilities.

At the same time, DNR ordered Ansul to dig wells around the area to measure how much arsenic had found its way into the soil and groundwater and to find out if it was moving.

2 Sheds Built

Ansul built two covered buildings into which it could move the salt. According to Sara Lambrecht, Ansul's public relations manager, the original salt pile had so solidified that it had to be blasted to be moved. A professional blaster would cover the pile with mats and detonate explosives under the mats, she said.

Nicholas said the firm investigated ways to reclaim the arsenic. It considered dissolving the salt to free the arsenic, then recrystallizing the salt. It considered ionic exchange, electro dialysis, reverse osmosis and heating the salt to vaporize the arsenic.

"Two-thirds came out technically bad and the others economically bad," said Nicholas.

In the meantime, at least, the pile of salt stopped growing. Costs associated with waste disposal, a poor herbicide market and Ansul's distance from the cotton fields brought a decision to abandon the arsenical herbicide business in 1976. Now 90% of the company's business is manufacturing fire protection equipment.

Finally, Ansul signed a contract with Waste Management, Inc., of Chicago, for permanent disposal of the wastes. Trucking began in April, 1977. Once in Illinois, the salt is mixed with a clay to stabilize it — a patented process — then it is buried in clay lined cells in a landfill site.

"As of now," said Nicholas, "Ansul has spent \$7 million on salt related environmental costs, including the operating budget for some treatment, storage facilities, disposal costs and monitoring."

And studies. Of these, one of the most important is a two year study in which the EPA and the Corps of Engineers has hired a team headed by Marc Anderson of the University of Wisconsin's water chemistry laboratory.

Dredgers Cautious

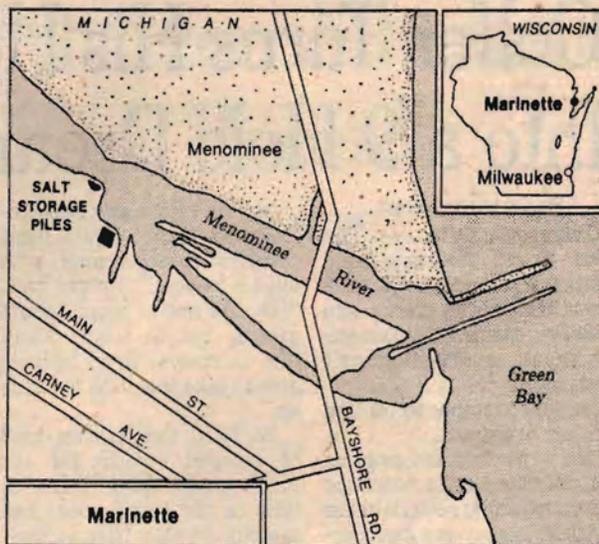
The corps wants to know how much arsenic would be released from the river bottom if it is dredged and whether specially designed diked areas must be built in which to store the arsenic rich dredging spoils.

The corps would have dredged Marinette harbor by now if arsenic weren't in the bottom sediments, a spokesman for the corps' Chicago office said.

Nonetheless, a spokesman for Marinette Marine, which manufactures seagoing vessels that draw up to 20.5 feet when they leave the shipbuilder, hasn't had problems with harbor depths yet.

According to Nicholas, the arsenic compounds that entered the soil, groundwater and river sediments were organic, a form that he said was less poisonous than inorganic forms.

Unfortunately, depending



Location of the arsenic deposits

on the kinds of bacteria and amount of oxygen present, the arsenic may be converted to more toxic forms in nature.

No Peril in Fish

Nicholas said company sponsored studies showed that Menominee River fish were not dangerous. He said arsenic tended to collect in the liver and other organs usually not eaten.

The flesh, he said, contained much less arsenic than the Food and Drug Administration allows for poultry. (There is no FDA arsenic standard for fish, he said.)

Anderson has found arsenic concentrations of up to 6,000 parts per million in groundwater at the Ansul site and 200 parts per million in the sediments of the river just offshore.

Fortunately, however, Marinette gets its drinking water from Green Bay north of the mouth of the Menominee River. Currents in the bay tend to move the Menominee River south. Furthermore, a deeper supply of groundwater apparently has been protected from contamination by an impermeable layer of stone.

Anderson said hazards

could arise if people unknowingly tapped the shallower groundwater. He said it was possible for the contaminated water to migrate into areas not now contaminated. With respect to the fish in the river and Green Bay, he said, "We just don't know."

Offlimits to Builders

The DNR's Kolberg also said the contaminated site was on the floodplain and therefore would not be subject to the pressures of development.

Nonetheless, the DNR would prefer that the water be cleaned up by pumping up the groundwater, chemically removing the arsenic and reinjecting the water into the ground.

Nicholas said Ansul had hired a consulting firm to study this solution and report back next July. Among other things, the consultant must study what chemical forms the arsenic has assumed.

"Budgetwise and manpowerwise," Nicholas said, "this problem will be with us for several years."

In the meantime, he said, after the last load of salt is removed next month, "we'll seal the site and abandon it for now."

