

is to the Village of Sauget Sanitary Sewage Treatment Plant, no NPDES permit is required of Monsanto. Therefore, the Board may only grant one year variances in this case.

The Illinois Environmental Protection Agency (Agency) recommended a denial of the Petition until and unless Monsanto provided certain information; and recommended certain conditions if a variance extension were to be granted.

A public hearing was held on February 26, 1975 in Belleville at which three representatives from Monsanto testified. Monsanto's Krummrich plant manufactures approximately 1.2 billion pounds of chemicals annually, distributed between 70 major organic and inorganic compounds. The plant employs 1270 people with an annual payroll of \$26 million (R. 16). For the purposes of this proceeding the plant can be divided into the chloralkali facility, where mercury is used as a carrier of electricity in producing chlorine, hydrogen, sodium hydroxide, and potassium hydroxide; (R. 20) and the remainder of the plant where the only use of mercury is in instrumentation (R. 96). The products of the chlor-alkali facility are in turn used in manufacturing approximately 80% of the products manufactured by the plant (R. 22).

Monsanto states that a denial of the variance extension could result, if all other remedies fail, in a shut down of the chlor-alkali facility, the only recognizable source of mercury at the plant (R. 50). This could in turn jeopardize the operation of the entire plant since it is dependent on the products of the chlor-alkali facility, there being shortages in the supply of these products from outside sources (R. 24-28). Questioned by the hearing officer as to other remedies that might be pursued if a variance extension were not granted, the witness mentioned further efforts to achieve a 0.5 ppb mercury effluent concentration; an appeal of the Board's decision; and a change in the standards (R. 60) as alternatives to discontinuing operations.

The main issue is the ability of Monsanto to comply with the 0.5 ppb mercury standard. The chlor-alkali facility is designed for the complete recycle of mercury; however, possible sources of mercury loss from the facility include water discharges, filter backwashing, brine leaks, caustic leaks, equipment wash water, and spills. These sources are collected and treated by a mercury removal system before being discharged to the sewers. In 1974, the mercury discharged from the chlor-alkali facility averaged less than 0.1 lb/day (R. 99). The remainder of the plant is involved with mercury in instrumentation, in switches, and in raw materials. Individual sources contribute minute or zero amounts of mercury; the remainder of the plant, however, when aggregated,

discharges approximately 0.15 lb/day of mercury to the sewers (R. 100-101). The total plant discharge is therefore approximately 0.25 lb/day. In terms of concentration, the Monsanto wastewater stream averages 3 to 4 ppb of mercury, based on daily sampling of the wastewater (R. 198-199). We note as an aside that this indicates a wastewater flow rate of 8.6 MGD.

As mentioned previously, the chlor-alkali facility employs a mercury removal system. The system utilizes sulfide plus activated carbon treatment to reduce the mercury concentration in the wastewater to 20 to 50 ppb (R. 172). The chlor-alkali facility is isolated from the remainder of the plant so that all liquid wastes, process water and rainfall runoff are collected in a sump basin and discharged to the sulfide treatment plant consisting of chemical addition, clarifier, sand filter, activated carbon filter, and polishing filter (R. 112-113). During January, 1975 the effluent from this treatment system averaged 27 ppb of mercury (R. 186); and since the solubility of mercury sulfide is from 18 to 20 ppb, this system is limited to approximately 20 ppb (R. 256).

Monsanto has continually investigated other mercury removal systems since the sulfide treatment system was installed in 1970 (R. 228-230). None of these was able to produce an effluent mercury concentration of 0.5 ppb, the minimum concentration resulting being 8 ppb for a system using resins (R. 245-246). Monsanto's primary efforts recently, however, have been focused on optimizing their existing treatment system, with further upgrading scheduled for 1976 and 1977 (R. 182).

According to Monsanto, even if the chlor-alkali treatment system was able to remove all mercury, the remaining plant discharge would still contain more than 0.5 ppb of mercury (R. 231). To reach the standard a reduction in the mercury discharged from the remainder of the plant would therefore be necessary.

Monsanto states that the effect of their 0.25 lb/day mercury discharge on the environment is insignificant based on sampling of the receiving stream, the Mississippi River, and the aquatic biota (R. 129-139). Based on an average mercury discharge of 0.25 lb/day from the plant, and the minimum river flow in the last 10 years of 34,600 cfs, the mercury concentration in the Mississippi River would increase by 0.00000134 mg/l (R. 131). Analyses of fish samples (Exhibits 11-13) showed no mercury concentrations exceeding 0.5 ppm, which is generally accepted as safe for human

consumption (R. 132). One Mississippi River sampling point seven feet from the outfall did show a mercury concentration of 1.4 ppb, (R. 137) exceeding the mercury standard. The Board notes that in the case of mercury there is no mixing zone since the effluent and water quality standards are identical.

The evidence indicates that Monsanto should receive an extension to their variance from Rule 702(a), and we will so order. We will require Monsanto to continue with their investigations of improved mercury removal systems, their upgrading efforts regarding the existing chlor-alkali facility mercury treatment plant, and their plans to decrease the amount of water used and waste discharged. In addition we will require Monsanto to decrease their discharge of mercury to 0.20 lb/day, based on a six-month moving average, but not to exceed 0.30 pound in any 24-hour period.

Monsanto, in its testimony by Robert L. Harness, environmental engineer, stated that only 76% of the mercury used in the chlor-alkali plant could be traced (R. 104-111). Spills, sludges, theft and atmospheric losses are examined but it would appear that annually some 10,880 lbs or 5.44 tons of mercury is not fully accounted for (computed as 34% of 32,000 lbs). The Board is concerned that this considerable amount of a toxic heavy metal is being lost perhaps via the air route in the cellhouse ventilation system where the measuring method is admittedly unreliable (Pet. Ex. 6, footnote on p.1). Secondly, the precision in effluent readings measured by the atomic absorption method is said to be $\pm 51\%$ at the 0.5 ppb level (R. 218). It is suggested in future material balance computation that Monsanto use the more exact neutron activation measurement method.

Monsanto raises the issue in its brief filed on April 16, 1975, that by operation of law pursuant to Section 38 of the Act, Monsanto's request was granted 90-days after the filing of its original petition on August 2, 1974. The original 90-day decision period would have expired on October 31, 1974. On August 15, and September 18, 1974, Monsanto amended its original variance petition. On November 18, 1974, Monsanto filed a waiver of the statutory 90-day rule which sought to preserve its right to maintain that its request had been granted by operation of law when the Board failed to take action on or before October 31, 1974. Monsanto again amended its petition on March 5, 1975.

Rule 408 of the Board's Procedural Rules states that "where the petition for variance is amended, the 90-day period shall commence from the date of the amendment". Petitioner had notice that the amendments of August 15 and September 18, 1974 would start the 90-day period running

anew. On August 8, 1974 the Board found Monsanto's petition to be inadequate and ordered Monsanto to amend its petition by filing additional information (13 PCB 345). This order clearly states that "the 90-day decision period set by statute shall run from the date of filing the additional information". The Board rejects the contention of Monsanto that the variance was granted by operation of law on October 31, 1974.

This Opinion constitutes the Board's findings of fact and conclusions of law.

ORDER

1. The W.G. Krummrich plant of Monsanto Company is hereby granted a variance from Rule 702(a) of Chapter 3: Water Pollution Regulations, for a period of one year from November 6, 1974 to November 5, 1975.
2. Monsanto shall limit their discharge of mercury from the Krummrich plant to 0.20 lb/day based on a six-month moving average, but not to exceed 0.3 pound in any 24-hour period.
3. Monsanto will continue their investigations of mercury removal processes, and the upgrading of the chlor-alkali mercury treatment plant.
4. Monsanto shall continue to reduce the volumes of wastewater generated and mercury discharged.
5. Monsanto shall report, starting within 30 days of the date of this Order, quarterly, to the Agency regarding items two through four of this Order.

IT IS SO ORDERED.

I, Christan L. Moffett, Clerk of the Illinois Pollution Control Board, hereby certify the above Opinion and Order were adopted on the 24th day of April, 1975 by a vote of 4-0.



Christan L. Moffett, Clerk
Illinois Pollution Control Board