

ILLINOIS POLLUTION CONTROL BOARD

December 13, 1973

GOODYEAR TIRE AND RUBBER COMPANY,)
(North Chicago plant),)
)
) Petitioner,)
)
) v. PCB 73-339
)
ENVIRONMENTAL PROTECTION AGENCY,)
)
) Respondent.)

Richard R. Wilfong, Attorney for Petitioner
Lee A. Campbell, Assistant Attorney General for the EPA

OPINION AND ORDER OF THE BOARD (by Mr. Henss)

Goodyear Tire and Rubber Company filed a Petition requesting variance from Rule 408(a)(lead) of the Water Pollution Control Regulations of Illinois. Petitioner is engaged in the manufacture of wire and textile reinforced rubber hose at its North Chicago plant. The plant employs about 700 persons, operates 24 hours per day, 7 days per week and produces about 300,000 ft. each day of automotive, industrial and hydraulic hoses.

Part of the operation is the forming of rubber and wire or yarn into various types of hose and curing it into a finished product. The curing process involves use of a lead sheath which serves as a temporary mold for the hose. The hose, encased in lead, is placed in a heater where temperatures of from 300° F. to 310° F. are maintained for 30 to 60 minutes in order to vulcanize or cure the hose. Heat for this vulcanizing process is supplied by steam. After the vulcanization has been completed, the lead sheath is cooled by spraying water from high velocity nozzles for a period of from 8 to 12 minutes. Lead oxide formed on the outer surface of the lead sheath is dislodged from the sheath during the cooling period and is carried away in a solid form in the waste cooling water. The lead sheath is then removed and melted for reuse.

Petitioner uses the vulcanizing process about 40 times per day which requires an average of 400,000 gallons of well water per day

for cooling. The water is used on a once through basis and is then discharged into a treatment facility which serves primarily as an oil-water separation basin. Approximately 1.2 MGD of effluent are discharged through the plant outfall to the Skokie Drainage Ditch, tributary to the Skokie River. Petitioner's outfall normally serves as the "head waters" of the Skokie Ditch (R. 76). Flow in the ditch near the point of discharge has a 7-day, 10 year low flow value of 0.84 MGD.

Rule 408(a) limits Petitioner after December 31, 1973 to a lead concentration in the effluent of 0.1 mg/l (or about 100 ppb). Monthly operation reports submitted by Petitioner to the Agency for the first 9 months of 1973 show that lead concentration in 24 hour composite samples were as follows:

MONTHLY OPERATION REPORTS--INDUSTRIAL EFFLUENT

<u>Month</u>	<u>Lead (ppb) Average</u>
Jan/73	260
Feb/73	270
Mar/73	350
Apr/73	240
May/73	100
Jun/73	100
Jul/73	220
Aug/73	250
Sep/73	233

Goodyear stated that all constituents in the plant effluent were within regulatory standards except for BOD and lead. The variance request did not apply to the excessive BOD concentration since Petitioner plans to connect the plant sanitary system to the North Shore Sanitary District system in the near future.

Recognizing the problem caused by the excessive lead discharge, Petitioner engaged the Nalco Chemical Company to conduct a process waste water study. This study was to determine the source of the 2 lbs./day lead discharge and the most effective means to reduce the concentration to meet the Standard. Upon determining that the lead oxide from the sheath is the source of the lead discharge, Nalco recommended installation of a special filtering system to handle the water waste from the vulcanizing process. Total cost for the system was estimated to be \$189,530.

Goodyear accepted the Nalco recommendation and received corporate approval for inclusion of the project cost in the plant budget. Goodyear then submitted its Project Completion Schedule to the Agency stating that compliance would be achieved through the use of the filter system by December 31, 1973. The Agency approved the Project Completion Schedule on June 28, 1973.

For some time before completing its Project Completion Schedule, Goodyear had an intensive research project underway to determine if the process requirement for the lead sheath could be eliminated. At several of its other hose plants, Goodyear had developed a new curing method called the "open steam" process. Success at the other plants was in part due to the less critical tolerance on dimensions and physical properties required of the hose produced at these plants. In addition to providing a more economical method of producing hose, the steam process completely eliminated the requirements for lead sheathing thereby eliminating any lead in the plant effluent.

Hose produced at the North Chicago plant was required to meet more demanding tolerances than hose from the other plants because of the critical service under which it would have to perform. In early 1973, Petitioner claims a major breakthrough was achieved for the North Chicago plant. It was discovered that cosmetic type blemishes and flat spots which developed in the hose during the vulcanizing process could be effectively controlled by corrugating the hose prior to vulcanization. Trials using the new technology began at the plant in early 1973 and, after internal testing had convinced corporate officials that the project was successful, samples were sent out for customer approval.

Goodyear now proposes to abandon the waste water filter system in favor of converting a significant portion of the vulcanizing process to the open steam method. Plant Manager Jerome F. Wolf estimated that 15 to 20% of the conversion had already been achieved (R. 36). Petitioner has compared data for the last six months of 1972 (before conversion to open steam commenced) with data for the first six months of 1973 (after conversion commenced). This comparison allegedly shows a reduction from 269 ppb to 222 ppb or about 17.5% in the effluent lead concentration. Petitioner attributes this reduction directly to the conversion to the open steam method of vulcanization.

Based on the reduction thus achieved and on future conversions, Goodyear estimates that compliance with Rule 408(a) can be achieved by December 31, 1974 without need for the \$189,350 filter system.

After making the decision to convert the vulcanization process to the open steam method in lieu of the proposed Nalco filter system, Petitioner contacted Nalco for information on the effects of the lead on the receiving stream. Nalco's Project Manager Frank J. Pokorny, performed a study which included contact with university professors, a literature search and personal observations.

Pokorny testified that as a result of his study, he "arrived at the conclusion that there is no significant detrimental effect to the receiving stream from the amount of lead being discharged from your North Chicago Goodyear hose plant". (R. 155) It was his belief that the Skokie Ditch at the point of discharge would not support higher aquatic forms such as fish (R. 158).

In making this determination, Pokorny testified that he used a Goodyear study of grab samples taken at various distances downstream from the plant's outfall. The grab samples were taken on September 11, 1973 at the plant outfall, one-fourth mile downstream from the outfall, one-half mile and one mile downstream. Analysis of the samples revealed lead concentrations of less than 100 ppb at the outfall, 200 ppb at the one-fourth mile point, and less than 100 ppb at both the one-half mile and one mile points.

(Ray Warner, Goodyear Manager of Engineering, testified that the low outfall concentration was probably because the sample was taken at a time when no hose cooling was taking place. However, Warner's conclusion does not conform entirely to other evidence concerning Petitioner's waste water treatment system. It is difficult to understand how the low lead concentration in the effluent could be directly attributable to Petitioner's cyclical water cooling periods since the effluent apparently emanates from a large holding pond rather than direct and immediate discharge from the process. While this point is not critical to Petitioner's position, the apparent discrepancy should have been explained more clearly.)

Pokorny also testified that his conclusion was based in part on information published in the document Water Quality Criteria by McKee and Wolf. A section of that document relating to lead oxide states "apparently insoluble lead is not toxic to fish" (R. 160).

The Agency produced no witnesses or evidence to refute Pokorny's testimony but did argue the point in its Recommendation. The Agency said:

"Based on presently available data, the Agency believes that Petitioner's allegations concerning the negligible adverse environmental impact associated with its lead discharge cannot be conclusively substantiated nor refuted. Excessive aqueous lead concentrations are readily dissipated through the sedimentation of particulate lead and the sedimentary adsorption of ionic lead species. However, the physiochemical dynamics of lead transport between the sediment-water

interface are not well defined. Additionally, there remain many questions surrounding the potential for sedimentary lead to enter benthic organisms and ultimately higher levels of the aquatic food web."

While we find this statement interesting, it fails to refute the Pokorny testimony in any manner. We shall, therefore, accept Pokorny's conclusion for the purpose of this variance only.

The North Chicago plant has experienced earnings deficits since 1969. Testimony by Petitioner's manager of accounting revealed that while the Goodyear Corporation was experiencing net profits of from 4.7 to 4.9%, the North Chicago plant experienced a net loss based on net sales of 4.5% in 1969, 7.16% in 1970, 7.4% in 1971 and 3.3% in 1972 (R. 120). However, current figures for 1973 show a net profit of about 0.1% (R. 42). The accounting manager indicated that installation of the proposed filter plant would severely jeopardize the potential net profit the plant might experience for 1973.

Petitioner's witnesses unanimously agreed that the degree of conversion to the open steam method is dependent upon customer acceptance of the new corrugated hose, but they did not agree on methods to be employed in the event customer approval is not obtained. Wolf testified that such an event would force Petitioner to install the \$190,000 filter system even if it could be used for only one year (R. 55). On the other hand, Warner testified that the strategy would probably be to select the heaters producing the most lead discharge and install individual filter systems on those units (R. 116). From this we conclude that there are several control methods available, and the testimony is a positive indication that some method, either a small or large filter system or conversion to the open steam method will be in operation by December 31, 1974. Wolf and Robert H. Feucht, Development Manager were confident that the proposed schedule for achieving compliance by December 31, 1974 could be bettered, although neither could say how much earlier compliance would be achieved.

Based on the entire record, it is our opinion that Petitioner has met the requirements for receiving a variance. Research by Goodyear has shown that the source of lead in its effluent can be significantly reduced by a change in process. Where such process alterations have the capability of producing an acceptable effluent, the Board will readily endorse the process alterations in lieu of expensive control equipment. Eliminating lead in the process rather than through waste water treatment unquestionably embodies the best form of pollution abatement. To force Petitioner to install the \$190,000 filter system at a time when process changes

should achieve compliance within one year would indeed be arbitrary and unreasonable.

Testimony by Pokorny relating to the environmental effects of the lead in Petitioner's effluent stands unrefuted. The Pokorny testimony, the reductions in lead concentration already achieved, the commitment to come into compliance during 1974, all indicate that the economic impact from installing the \$190,000 filter system significantly outweighs the possible detrimental effects of this effluent on the Skokie Ditch.

The Agency recommended denial of the variance unless Petitioner could show that 1) continued lead discharges to the Skokie Ditch would have no significant environmental impact, and 2) that conversion to the open steam process could not have been initiated at an earlier date or accelerated to enable timely compliance with Rule 408(a). It is our opinion that Good-year has made such proof. The EPA said that, if Petitioner proved these two points, the variance should be granted subject to a schedule calling for periodic decreases in the lead concentration based on 24-hour composite samples. This schedule is precisely the same schedule Petitioner proposes to adhere to (Petitioner Exhibit 1) and we shall grant the variance subject to the agreed effluent reduction schedule.

ORDER

It is the Order of the Pollution Control Board that:

1. Goodyear Tire and Rubber Company, North Chicago plant, is granted a variance from Rule 408(a) of the Water Pollution Control Regulations of Illinois until December 13, 1974, in order to make such process alterations or such installation of control equipment as may be required to achieve compliance with said Rule.
2. This variance is subject to the following condition: effluent lead concentrations shall not exceed the following monthly average levels based on weekly 24 hour composite samples:

<u>Date</u>	<u>Lead (mg/l)</u>
January 1, 1974	0.211
April 1, 1974	0.179
July 1, 1974	0.160
October 1, 1974	0.154
December 1, 1974	0.100

3. Goodyear Tire and Rubber Company shall, by January 3, 1974, post a bond in the amount of \$20,000 in a form acceptable to the Environmental Protection Agency, such bond to be forfeited in the event Petitioner fails to make such process alterations or such installation of control equipment. The bond shall be mailed to: Fiscal Services Division, Illinois EPA, 2200 Churchill Road, Springfield, Illinois 62706.
4. Goodyear Tire and Rubber Company shall provide the Agency with quarterly progress reports, commencing January 3, 1974. Such reports shall completely detail all progress or lack of progress towards achieving compliance with Rule 408(a).

I, Christan L. Moffett, Clerk of the Illinois Pollution Control Board, hereby certify the above Opinion and Order was adopted this 13th day of December, 1973 by a vote of 5 to 0.

Christan L. Moffett