

Illinois Pollution Control Board
June 27, 1972

ENVIRONMENTAL PROTECTION AGENCY)	
)	
v.)	PCB 71-369
)	
)	
RUSSELL, BURDSALL & WARD BOLT AND)	
NUT COMPANY)	

Stuart W. Thayer and Sullivan & Cromwell for Russell, Burdsall & Ward Bolt and Nut Company
Richard W. Cosby, Assistant Attorney General for the Environmental Protection Agency

Opinion and Order of the Board (by Mr. Aldrich):

The Environmental Protection Agency filed a complaint against Russell, Burdsall, and Ward Bolt and Nut Company (RB&W) on November 24, 1971. The RB&W Co. manufactures steel fasteners such as screws, nuts, and rivets from purchased hot rolled steel rods at an industrial facility on E. Second Street in Rock Falls, Whiteside County, Illinois.

The Agency alleged six violations:

1. That beginning April 1, 1971, and continuing to the close of the record, Respondent operated its plant and facilities in such a manner as to be incapable of providing adequate wastewater treatment or of preventing or minimizing the escape, spillage or leakage of contaminants including iron, oil, zinc, cyanide, zinc-cyanide, cyanogen compounds and other water contaminants into the environment in Illinois so as to alter the physical, chemical or biological properties of the Rock River in a way as to cause or is likely to create a nuisance or to pollute the waters. This violation is of Section 12(a) of the Environmental Protection Act as defined in Section 3(d) (n) and (o) of such Act, Ill. Rev. Stat. 1969 (Supp. 1970), Ch. 111-1/2, §§1012(a) and 1003(d), (n) and (o).
2. That during the period April 1, 1971 and continuing to on or about November 12, 1971 Respondent operated his plant and facilities in such a manner as to deposit oil, cyanide, zinc, zinc-cyanide, cyanogen compounds and other contaminants upon the land in the vicinity of the Rock River so as to create a water

pollution hazard, this being a violation, as defined in Section 3(d), (n) and (o) of the "Environmental Protection Act," in violation of Section 12(d) of such Act, Ill. Rev. Stat. 1969 (Supp. 1970), Ch. 111-1/2, §§1003(d), (n) and (o) and 1012(d).

3. That on or about July 31, 1971 Respondent operated his plant and facilities in such a manner as to discharge pollutants which caused the death of 98,945 fish of sundry varieties over a ten-mile stretch of the Rock River below Respondent's plant site, this being in violation of the provisions of Rule 1.05(d) relative to Toxic Substances in Aquatic Life Sectors of the Illinois Sanitary Water Board Rules and Regulations SWB-11, promulgated pursuant to Section 6(b) and (f) of an "Act to Establish a Sanitary Water Board," etc., Ill. Rev. Stat. 1969, Ch. 19, §145.6 and continued in effect by Section 49(c) of the said Environmental Protection Act, Ill. Rev. Stat. 1969 (Supp. 1970), Ch. 111-1/2, §1049(c).
4. That since April 1, 1971, and continuing to on or about August 5, 1971 Respondent's corporation engaged in manufacturing processes involving cyanides or cyanogen compounds without suitable structures to assure that no such compounds could escape from the building and reach the sewer system or water course in violation of Rule 1.01 of the Rules and Regulations SWB-5, Article I of the Illinois Sanitary Water Board effective since January 2, 1965 pursuant to Rule 2.02 thereof, promulgated pursuant to Section 6(b) of an "Act to Establish a Sanitary Water Board," etc., Ill. Rev. Stat. 1969, Ch. 19, §145.6, and continued in effect by Section 49(c) of the said Environmental Protection Act, Ill. Rev. Stat. 1969 (Supp. 1970), Ch. 111-1/2, §1049(c).
5. That since April 1, 1971 and continuing each day to on or about November 5, 1971 and thereafter on November 12, 1971 Respondent operated his plant and facilities in such a manner as to cause or allow the discharge of pollutants including oil, scum and iron into the waters of the state in violation of the respective provisions, (a), (b), (c) and (d), of Rule 1.03 MINIMUM CONDITIONS of the Illinois Sanitary Water Board Rules and Regulations SWB-11, promulgated pursuant to Section 6(b) and (f) of an "Act to Establish a Sanitary Water Board," etc., Ill. Rev. Stat. 1969, Ch. 19, §145.6, and continued in effect by Section 49(c) of the "Environmental Protection Act," Ill. Rev. Stat. 1969 (Supp. 1970), Ch. 111-1/2, §1049(c).
6. That during the period beginning April 1, 1971 and continuing each day to on or about November 5, 1971 Respondent operated his plant without the best practicable treatment or control prior to discharge into the Rock River in that until November 5, 1971 Respondent did not provide for substantially complete removal of settleable solids, removal of all floating debris, oil, grease or scum or sludge solids, removal of color, odor, or turbidity to below obvious levels, and removal of heavy metals or of toxic

or odor producing substances in accordance with the levels of constituents and properties determined by the Board, and that to the close of the record, Respondent did not provide adequate storage facilities for hazardous materials and oils which are capable of causing water pollution if accidentally discharged, this being in violation of Provisions b. and c. of Rule 1.08 IMPLEMENTATION AND ENFORCEMENT PLAN, Paragraph 10 Sanitary Water Board Rules and Regulations SWB-11, promulgated pursuant to Section 6(b) and (f) of an "Act to Establish a Sanitary Water Board," etc., Ill. Rev. Stat. 1969, Ch. 19, §145.6, and continued in effect by Section 49(c) of the said Environmental Protection Act: Ill. Rev. Stat. 1969 (Supp. 1970), Ch. 111-1/2, §1049(c).

Russell, Burdsall and Ward Nut and Bolt Company performs four general manufacturing operations which may contribute to water pollution: Pickling which involves the removal of scale by hot sulfuric acid; Washing to remove dirt and lubricants; Plating, an electrical process producing a thin zinc coating; and Galvanizing involving dipping in molten zinc to produce a relatively thick protective coating. In order to reduce pollution from these processes RB&W instituted and has had in operation a number of waste treatment projects dating from 1963:

Cyanide destruction by the Lancy system installed on the Stevens plater and North plating line in 1963. The purpose of this system is to detoxify the cyanides by first converting them to cyanogen chloride followed by hydrolysis to produce cyanate. Cyanates are subsequently oxidized to carbon dioxide and nitrogen gas.

Precipitation of heavy metals through a chemical treatment system installed in 1963. Acids and alkalis are blended to attain an alkaline mixture. After mixing and completion of chemical reactions the slurry is pumped to sludge beds for clarification. The sludge is removed by an outside scavenger for off-side disposal.

Sulphuric acid reclamation by a KSF system installed in 1969 to reclaim the spent pickle liquor. In the process, ferrous sulphate crystals are precipitated and ultimately disposed of by an outside scavenger. The salvaged acid is recovered for reuse.

A Pfaudler system for cyanide recovery was installed on the Ionic plater in 1970.

Oil and sediments removal by a gravity separator installed in 1971. The wastes are removed by outside scavengers.

At a meeting in the Attorney General's office, a schedule was developed for eight specific projects to reduce pollution and the threat of pollution by RB&W. All targeted completion dates were met, the final one being February 28, 1972.

RB&W began on February 1, 1972 to shift to low cyanide solutions in its North line, Stevens and Ionic platers thus reducing the cyanide content of its effluent from 8 to 10 oz. per gallon down to 2 to 3 oz. This was, however, accompanied by an increase in off-quality product. Nevertheless, RB&W proceeded to test the feasibility of no-cyanide solutions converting the Stevens plater March 14 and the Ionics plater April 7 and North line prior to April 26. Still higher rejection rates and continuing operating difficulties cast doubt that the company could continue to use non-cyanide solutions.

Unfortunately the sewage treatment process reduces but does not eliminate cyanides as shown by these data for January 1-12, 1972:

	Total Cyanides mg/l	"Free" Cyanides mg/l
Influent	0.957	0.164
Effluent	0.431	0.008

During the period April 10 to 17 when two platers were shifted to low cyanide solution, the cyanide content of the company discharge to the municipal sewer system was 0.11 mg/l as compared to 1.08 prior to any conversion in January 1 to 12, 1972. The sewage treatment process reduced the cyanides from 0.11 in the influent to 0.05 in the effluent but this is still double the standard. Since that date, the North line has also been converted to no-cyanide solution and the Agency is satisfied RB&W is in compliance with the Act.

The report of the engineering consulting firm Hazen and Sawyer, contains the statement that after conferring with manufacturers and both state and federal regulatory officials they are still unable to recommend a treatment technology effective in oxidizing complexed cyanides of the type present at the Rock Falls plant of RB&W Company. They suggest further experimental studies at the RB&W plant.

The response of RB&W at the time of the fish kill incident was highly commendable. Since there were no dead fish at that time in the immediate vicinity of the plant, it had not been established that the company was responsible for the fish kill. The record mentions no tests by the Agency of water in the zone of fish kill to establish the cause of death. Nevertheless Respondent began an immediate and thorough investigation of possible sources of cyanide which could have caused fish poisoning. The company thus initiated the search and reported the loss of cyanide solution to the Agency and furthermore established the pathway by which cyanide could have reached the Rock River.

The response of the company at the time of the fish kill incident was as follows: The plant manager was alerted to a reported fish kill late Saturday, July 31. He initiated a detailed in-plant investigation to determine whether RB&W was in fact the cause of the kill. After two and one-half days of careful review within the plant, it was determined that a malfunction had occurred within its plating department in connection with an automatic plating machine. The Ionics plater had previously been shut down for maintenance work. Prior to the episode, the plating tank was refilled from a holding tank. Following this initial refill operation, it was observed that the plating solution level repeatedly fell within the tank, thus requiring repeated additions of sodium cyanide, caustic soda and water. Over a two hour period, three additions were required in order to maintain the normal operating level in the plating tank. The operator informed his supervisor that solution was being lost from the tank sump. Inspection revealed no obvious improper operation of the system so refilling from a reserve tank was continued. On the morning of July 31, a production scheduler, upon arriving at work noted discharge of solution from a vent pipe on an outside storage tank. The escaping solution ran down the side of the tank and seeped into the soil. Roto-Rooter of Rockford was called to remove solution from a reserve tank in order to reestablish adequate reserve storage capacity.

The company continued to try to determine the cause of the loss of solution from the plating tank and also to determine the amount of solution that may have seeped into the soil. It determined that a pipe used to fill the plating tank from the reserve tank was acting as a siphon when the transfer pumping action was discontinued. Consequently, the solution was siphoned back to the reserve tank by the fill pipe. At the same time, a liquid-level sensor in the plating tank sump, detecting a low solution level, actuated a water fill line which caused intermittent water additions to the system. As a consequence of this series of operations an estimated 4,200 ounces of sodium cyanide overflowed onto the soil.

In order to determine whether the spillage on the ground actually reached the river via the sewer, the company poured a dye solution on the ground in the area of the overflow. One hundred gallons of dye water applied in fifteen minutes resulted in small traces of dye sporadically appearing in the sewer. The test was repeated and again the dye was observed in a nearby manhole thus confirming that cyanide from the RB&W plant could have reached the Rock River. Since there was no direct connection between the point of overflow and any pipe leading to the river, it is not possible to estimate the quantity of cyanide that actually reached the Rock River. The company has initiated several steps to avoid a repeat of the incident. First, the overflow pipe is being diverted into a holding tank. This will be completed by August 10, 1972. Second, the transfer piping has been altered to eliminate the possibility of siphoning. Third, a program of regular sampling for zinc cyanide, pH and oil has been instituted at the wet well. Fourth, supervisors and operating personnel have been re-instructed as to solution transfer procedures.

It is unfortunate that fish kills or similar incidents frequently happen before thorough abatement procedures are initiated. As has already been indicated RB&W installed a series of pollution reduction programs from 1963 to November, 1971. Nevertheless, it is highly probable that pollution resulting from direct discharges of incompletely treated wastes from the plant to the Rock River occurred until the company made extensive adjustments and introduced its discharge into the city sewage system in November, 1971.

We now turn to the evaluation of the conditions of the stipulation and proposed settlement. First, the Rock River will be protected from pollution by RB&W Company by the condition of the stipulation which says that Respondent agrees not to violate the Environmental Protection Act or any applicable regulation adopted thereunder. The stipulation includes the condition that RB&W will not discontinue the use of non-cyanide plating solutions without 30 days prior notice to the Environmental Protection Agency and the Illinois Attorney General. We assume that the conditions under which the agency would approve such a move will protect the biological integrity of the Rock River.

The penalty of \$13,449.96 suggested for the fish kill is based upon the formula of the Division of Fisheries, Illinois Department of Conservation. The penalty of \$40,000 we assume is for failure to take all necessary steps in order to avoid pollution or the threat of pollution of waters of the State and for the fish kill episode itself above and beyond the assigned value of the fish. We have previously said that the response of the company to the episode was exemplary. We believe the proposed penalties are fair and reasonable.

This Board is on record as favoring a reduction in time and expense of litigation whenever it is possible to arrive at an equitable settlement which serves the purpose of the Environmental Protection Act without a hearing. (see EPA v. Charles R. Rhodes, PCB 71-53, September 16, 1971; EPA v. Custom Farm Services, Inc. PCB 71-312, September 21, 1971; and EPA v. Solid Waste Disposal Company, PCB 71-236, February 3, 1972).

We are, however, concerned that the proposed settlement in this case provides no opportunity for the public to express its views on the conditions of the settlement. The effect of this violation of the Environmental Protection Act was neither unknown nor obscure. An estimated 98,945 fish were killed including substantial numbers of game fish of which some were of harvestable size. To guide parties in the future with respect to stipulations and proposed settlements we shall suggest changes in the Procedural Rules of the Pollution Control Board that will provide an opportunity for public knowledge of and response to proposed settlements.

In the absence of a hearing record, we are not asked to decide whether the specific violations alleged in the original notice by the Agency were proven.

ORDER

1. Russell, Burdsall & Ward Bolt and Nut Company shall cease and desist violations of the Environmental Protection Act and applicable Regulations adopted thereunder.
2. Russell, Burdsall & Ward Bolt and Nut Company shall not, without 30 days prior written notice to the Environmental Protection Agency and the Illinois Attorney General, discontinue use of no-cyanide plating solution in any of its three plating lines and will for a period of one year from the entry of this order furnish the Agency and the Attorney General monthly progress reports on the problems encountered with the no-cyanide plating solutions.
3. Russell, Burdsall & Ward Bolt and Nut Company will for a period of two years from the date of this order monitor the effluent from its plant to the City of Rock Falls sewage treatment plant by taking daily composite samples of its discharge to the city sewer system and analyzing such samples for zinc, iron and pH. Respondent will also monitor such samples for cyanide in the event he resumes plating solutions containing cyanide after giving notice required under No. 2 above. The results of the tests shall be submitted to the Agency and the Attorney General on a monthly basis.
4. Russell, Burdsall & Ward Bolt and Nut Company shall within ten days of the entry of this order, pay to the State of Illinois for deposit in the Fish and Game Fund in the State Treasury, the sum of \$13,449.96 representing the reasonable value of the estimated fish kill on July 31, 1971.
5. Russell, Burdsall & Ward Bolt and Nut Company shall pay, within ten days of the entry of this order, \$40,000 to the State of Illinois. Penalty payment by certified check or money order payable to the State of Illinois shall be made to the Fiscal Services Division, Illinois Environmental Protection Agency, 2200 Churchill Road, Springfield, Illinois 62706.

I, Christan L. Moffett, Clerk of the Pollution Control Board, certify that the Board adopted the above Opinion and Order this 27th day of June, 1972, by a vote of 5 to 0.



