

ILLINOIS POLLUTION CONTROL BOARD  
January 9, 1986

ILLINOIS ENVIRONMENTAL )  
PROTECTION AGENCY, )  
 )  
Complainant, )  
 )  
v. ) PCB 81-27  
 )  
CABOT CORPORATION, )  
 )  
Respondent. )

OPINION AND ORDER OF THE BOARD (by J. Theodore Meyer):

This matter comes before the Board on a February 19, 1981 complaint filed by the Illinois Environmental Protection Agency (Agency) against Cabot Corporation (Cabot). Count I alleges that Cabot emitted contaminants arising from the manufacture of silicon tetrachloride on several dates from December 11, 1970 through January 24, 1980. Counts II through IX allege violations of air and water pollution regulations arising out of the collapse on December 19, 1979 of a tank containing silicon tetrachloride. There is no relationship alleged between the emissions enumerated in Count I and the December 19, 1979 event.

On March 19, 1981 Cabot filed a motion to dismiss the complaint on statute of limitations grounds which was denied by Board order of April 16, 1981. Hearings were scheduled and cancelled repeatedly over a four year period. On November 7, 1985 a Stipulation and Proposal for Settlement was filed. Hearing on the settlement, as well as related permitting matters, was held on November 6, 1985. The stipulation provides that Cabot does not admit "the sufficiency of the facts to form a foundational basis for a finding of violation of the [Environmental Protection] Act" but does not contest the facts as stipulated to. (Stip. at 7-8). Should the Board determine that a violation occurred, Cabot agrees to make a payment of \$17,500 to the Illinois Environmental Protection Trust Fund.

Stipulated Facts

The stipulated facts provide that Cabot owns and operates a chemical manufacturing plant in an industrial park situated approximately 5 miles from Tuscola in a rural area of Douglas County, Illinois. The plant employs approximately 175 people. The plant manufactures a silica product (SiO<sub>2</sub>) known as Cab-O-Sil®. This product is made by reacting silicon tetrachloride (siltet) or a blend of siltet and methyl trichlorosilane (MTCS) with hydrogen and air in a flame process. Cab-O-Sil® is collected, treated and shipped to customers either in bags or in

bulk cars. The end uses of this product include: as a reinforcement agent for silicone rubber; as a thickening agent for sealants, polyester resin and other chemicals; for rheology control, and as a free flowing agent. The by-product, hydrogen chloride gas, is absorbed through scrubbers and recovered as muriatic acid.

The stipulation further provides that Cabot owned and operated several storage tanks on the grounds of the plant (the Tank Farm) used to store various raw materials, including the siltet and MTCS used in manufacturing Cab-O-Sil®. Sometime in 1974-5 all storage tanks were taken out of service and replaced with pressure vessels (spheres or bullets). In 1979, only two tanks remained; these were kept only for use in an emergency requiring transfer of stored raw material from one of the pressure vessels. An unknown quantity of MTCS and siltet residue (heel) remained below the outlet valve level in the tank bottoms. On December 19, 1979, at approximately 4:42 a.m., without warning, one of the two remaining storage tanks collapsed causing the escape of the siltet and MTCS blend contained therein. The collapse was caused by excess pressure but the cause of the pressure build-up is unknown. It is estimated that the tank contained a heel of between 3,000 to 8,000 gallons. Some quantity thereof escaped from the tank, only a small amount of which escaped from the diking containment and liquid impoundment system surrounding the tank. A small amount of siltet/MTCS blend was splashed or thrown over the top of the dike onto adjacent railroad tracks by the force of the tank collapse. Attendant fumes of hydrogen chloride and hydrogen chloride mist were created and began to leave the site at once.

Immediately after the spill, Cabot proceeded in accordance with its emergency response plan. The appropriate authorities were immediately notified. Residents within a 2 mile radius and plant employees were evacuated. Clean-up and containment was undertaken and included securing the dike and shutting appropriate valves in the Tank Farm to make sure all acid liquid would be contained. Cabot personnel were required to wear emergency escape respirators, hard hats, safety glasses and goggles. Rain type and total enclosure type acid suits were worn by those working close to the spill.

Water was used to dilute the acid spilled on the tracks and knock down the acid fumes in the atmosphere. Dow Corning Silicone 200 oil was poured into the diked area so as to spread over the spill surface area and subdue the fumes. At this point the spill material was pumped into empty 55 gallon drums. Once the spilled liquid was removed, however, the exposed rocky areas of the dikes began fuming again. Cabot personnel attempted to utilize an AFFF-water foam to prevent this fuming but improper mixing of the AFFF material with water caused a reaction with the siltet/MTCS blend so as to cause more fumes. At this point the

Illinois State Police ordered Route 36\* closed for an unknown period of time. Oil was then sprayed onto the ground and the remaining liquid surface to prevent more fuming. The remaining spilled contents were neutralized by the introduction of caustic lime and then diluted. The diluted neutralized liquid was then pumped to a holding dike and properly disposed of.

The volumetric amount of siltet/MTCS blend collected was 57 drums of 55 gallon capacity. The total volume of spilled chemical, silicon oil, water and dirt collected was 2500 to 2700 gallons, such drums not having all been filled to capacity. No reports of personal injuries were received other than a minor foot injury to a Cabot employee. Approximately fifty property damage claims were eventually paid by Cabot or its insurer.

### Findings

Count I is unrelated to the spill incident which occurred on December 19, 1979 but rather charges that from December 11, 1970 to January 24, 1980 inclusive Respondent caused or allowed the discharge of hydrogen chloride gas, hydrochloric acid mist and/or chlorine gas so as to cause air pollution. As no facts are stipulated to which would support a Board finding that such discharges did occur over the ten-year period alleged, the Board is unable to find that such violations occurred.

Count II specifically concerns the events of December 19, 1979 and alleges that Respondent caused or allowed the creation of air pollution through the releases of hydrogen chloride gas and hydrochloric acid mist in violation of Section 9(a) and former Rule 102 of the Board's Air Pollution Regulations (now 35 Ill. Adm. Code 201.141).

Section 9(a) of the Act provides:

No person shall:

- a. Cause or threaten or allow the discharge or emission of any contaminant into the environment in any State so as to cause or tend to cause air pollution in Illinois, either alone or in combination with contaminants from other sources, or so as to violate regulations or standards adopted by the Board under this Act.

Under Section 3(b) of the Act, air pollution is defined as:

the presence in the atmosphere of one or more

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\*Although the Agency's complaint alleges that Route 45 was closed, the Stipulation provides that Route 36 was in fact closed.

contaminants in sufficient quantities and of such characteristics and duration as to be injurious to human, plant, or animal life, to health, or to property, or to unreasonably interfere with the enjoyment of life or property.

Former Rule 102 of the Air Regulations mimics these statutory provisions.

The Agency alleges that hydrogen chloride in gaseous form and hydrochloric acid mist are corrosive and, in sufficient concentration, harmful or toxic to human, animal and plant life. The Agency further alleges that the release of these substances:

1. Caused breathing difficulties for persons living, working or temporarily located nearby said plant, necessitating the issuance of respirators to persons working on the plant grounds and the evacuation of thirty families;
2. Caused the temporary closing of U.S. Highway 45\* in and around Tuscola, Illinois, and
3. Caused the exacerbation of corrosion of metals in buildings, structures, equipment and motor vehicles located nearby the plant, crop damage and reduced crop yields from farmground located nearby said plant and elevated pH levels in such farmground.

It is stipulated that Agency personnel took at least 22 air samples at various times during December 19, 1979, and at various places near the plant, including the following results:

<u>Time</u>	<u>Place</u>	<u>Results</u>
9:15 a.m.	0.5 miles east	60 ppm HCl
9:15 a.m.	3500 ft. southeast	15 ppm HCl
9:30 p.m.	1 mile west	80 ppm HCl
9:45 p.m.	1 mile west	50 ppm HCl
10:00 p.m.	1 mile west	16 ppm HCl

It is also stipulated that many other samples taken by the Agency showed concentrations at significantly lower levels.

As previously mentioned, Cabot challenges the sufficiency of the facts to form the foundational basis for a finding of violation. However, no basis for this assertion is provided. The Board disagrees with Cabot's position. The stipulated facts adequately support the conclusion that the contaminants, hydrogen

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\*See footnote at 3.

chloride gas and acid mist, were present in such quantities and of such characteristics and duration as to be injurious to human health and property. The gas and acid mist were present at concentrations of up to 80 ppm at distances a mile away from the plant and these excess concentrations persisted over a period of hours. These conditions required the evacuation of plant personnel and residents within a two mile area, necessitated the wearing of breathing apparatus by plant personnel, required the closing of a public road and resulted in approximately fifty property damage claims. Thus, the Board finds Cabot to have violated Section 9(a) and 35 Ill. Adm. Code 201.141 (former Rule 102).

The remaining Counts III through IX all concern violations of Section 12 of the Act regarding water pollution and varying Board regulations. In substance, these counts allege that the tank was surrounded by an earthen dike with an opening in the northwest corner and that a substantial, but unknown, quantity of the released siltet flowed through this opening shortly after the tank collapse. Due to Respondent's use of water to wash down the siltet which had flowed outside the diked area, siltet and water thus flowed into a railroad drainage ditch which is tributary to a field tile, thence to a headwall tile. The headwall tile, in turn, is the beginning of a stream tributary to the Scattering Fork, a tributary to the Embarras River. The Agency alleges that siltet, when mixed with water reacts to form hydrochloric acid and silicic acid. Hydrochloric acid is corrosive and, in sufficient concentration in water, harmful or toxic to human, animal, plant and aquatic life. As a result, it is alleged that the Respondent caused or tended to cause water pollution in violation of Section 12(a) of the Act (Count III); deposited a contaminant upon the land so as to create a water pollution hazard in violation of Section 12(d) (Count IV); and caused the discharge of an effluent so as to violate water quality standards in violation of Rule 402 (now Section 304.105). Specific water quality standards alleged to have been violated are that for unnatural color and sludge, Rule 203(a) (now Section 302.203) (Count V); pH, Rule 203(b) (now Section 302.204) (Count VI); iron, Rule 203(f) (now Section 302.208) (Count VII); and total dissolved solids (TDS), Rule 203(f) (now Section 302.208) (Count VIII). The last count (Count IX) alleges that Respondent failed to take reasonable measures to prevent the spillage of contaminants in violation of Rule 601(b) (now Section 306.102).

The stipulated facts provide that Agency personnel conducted water sampling activities on December 19-21, 1979. The Agency results include:

"(a) waters into which the siltet mixture flowed were observed to have unnatural sludge or bottom deposits and unnatural color;

(b) the same waters measured at field tiles, include the following results:

- (i) a pH as low as 1.0
- (ii) concentrations of iron as high as 9.1 mg/liter and
- (iii) concentrations of total dissolved solids as high as 2,000 mg/liter

Again, Cabot contests the sufficiency of these facts to form the basis for a finding of violation. No rationale for this interpretation is supplied.

Section 12(a) of the Act, in pertinent part provides:

No person shall:

- a. Cause or threaten or allow the discharge of any contaminants into the environment in any state so as to cause or tend to cause water pollution in Illinois, either alone or in combination with matter from other sources . . . ."

Under Section 3(hh) "water pollution" is defined as:

[the] alteration of the physical, thermal, chemical, biological or radioactive properties of any waters of the State, or such discharge of any contaminant into any waters of the State, as will or is likely to create a nuisance or render such waters harmful or detrimental or injurious to public health, safety or welfare, or to domestic, commercial, industrial, agricultural, recreational, or other legitimate uses, or to livestock, wild animals, birds, fish, or other aquatic life.

"Waters" are defined by Section 3(ii) to be:

all accumulations of water, surface and underground, natural and artificial, public and private, or parts thereof, which are wholly or partially within, flow through, or border upon this State.

It is clear from the stipulation that Cabot personnel used water to wash down the splashed siltet and that the siltet mixture proceeded to flow into "waters" as defined by Section 3(ii). The siltet mixture was a contaminant which altered the chemical and physical properties of those waters by altering pH, TDS, iron and appearance. The physical and chemical alteration of those waters did or was likely to render them harmful to public health and to aquatic life. Thus, the Board finds that Cabot violated Section 12(a) of the Act by causing water pollution as alleged in Count III.

Count IV alleges that Cabot violated Section 12(d) of the

Act. Section 12(d) prohibits the "[d]eposit [of] any contaminants upon the land in such place and manner so as to create a water pollution hazard." Id. The Agency alleges that the discharge of siltet constituted a deposit of a contaminant upon land which was surrounded by an incomplete or otherwise ineffective dike. Siltet thus escaped the dike, necessitating the clean-up efforts which led to the discharge of contaminants into the waters of the State. The stipulation provides that siltet did escape the diking system by being splashed or thrown over the top of the dike onto adjacent railroad tracks. The Board finds that the splashing of siltet constituted a deposit of a contaminant upon land so as to create a water pollution hazard in violation of Section 12(d) of the Act.

In part, Counts V through VIII allege violations of Section 12(a) and former Rule 402 by discharging effluent so as to cause a violation of certain water quality standards. Whether former rule 402 was violated by the "flow" of siltet turns on whether the "flow" constituted the discharge of an "effluent." "Effluent is defined as "any wastewater discharged, directly or indirectly, to the waters of the State or to any storm sewer, and the runoff from land used for the disposition of wastewater or sludges, but does not include nonpoint source discharges such as runoff from land or any livestock management facility . . . ." 35 Ill. Adm. Code 301.275. "Wastewater is defined to be "sewage, industrial waste, or other waste, or any combination of these whether treated or untreated." 35 Ill. Adm. Code 301.425.

The Board does not agree that the flow of siltet involved here can be characterized as an effluent. The Board rests this conclusion on two bases. First, an effluent is a conveyance of "wastewater". Although the siltet mixture is used in an industrial process, this does not mean it is a waste. Waste is "any garbage . . . or other discarded material." Section 3(11). No facts are stipulated to which would allow the Board to conclude that the siltet/MTCS was "discarded" material. More importantly, the effluent definition specifically excludes "non point source discharges such as runoff from land." 35 Ill. Adm. Code 301.275. The Board believes that this event is more accurately characterized as runoff from land than an indirect discharge of wastewater. Thus, the Board declines to find Cabot in violation of former Rule 402 as alleged in Counts V through VIII.

However, Counts V through VIII also allege separate violations of the water quality standards themselves and Section 12(a) of the Act. Specifically, Cabot is alleged to have violated the water quality standards for unnatural color and sludge, pH, iron and TDS. It is stipulated that unnatural sludge, color and bottom deposits were observed by Agency personnel and that pH was as low as 1.0, iron was as high as 9.1 mg/liter and TDS was as high as 2,000 mg/liter. Accordingly, the Board finds Cabot in violation of Section 12(a) of the Act and the water quality standards as alleged in Counts V through VIII.

The last count concerns the Respondent's alleged failure to take reasonable measures to prevent the spillage of contaminants in violation of former Rule 601(b) (now Section 306.102). As to this count, the stipulation merely provides that a "diking containment and liquid impoundment system" surrounded each tank. (Stip. at 3). It is also provided that a small amount of the siltet/MTCS blend escaped from this system. Former rule 601(b) provides that all reasonable measures to prevent spillage must be taken. No facts are provided which would allow the Board to form a judgement as to whether the diking system employed by Cabot was a reasonable measure or not. The only relevant information supplied is that some spillage did occur. The Board declines to find a violation merely because the diking system failed to contain the entire spill. Spillages can certainly occur where all reasonable measures to prevent them have been undertaken.

### Penalty

After evaluating the factors listed in Section 33(c) of the Act, the Board finds that Cabot's violations had an adverse impact on the general welfare and health of the people of the State of Illinois by contributing contaminants to the environment. The Board further finds that the Cabot's facilities are socially and economically valuable and suitably located. Finally, the Board finds that it is technically feasible and economically reasonable to eliminate possible future violations.

The parties have stipulated to a penalty of \$17,500. After evaluating all the facts and circumstances, the Board finds that a fine of \$17,500 is appropriate to aid in the enforcement of the Act.

This Opinion constitutes the Board's findings of facts and conclusions of law in this matter.

### ORDER

1. The Board finds that Cabot Corporation has violated Sections 9(a), 12(a) and 12(d) of the Act and 35 Ill. Adm. Code 201.141, 302.203, 302.204 and 302.208.
2. Within 30 days of the date of this Order, Cabot Corporation shall, by certified check or money order, pay a civil penalty of \$17,500 payable to the State of Illinois and designated for deposit into the Environmental Protection Trust Fund, which is to be sent to:

Illinois Environmental Protection Agency  
Fiscal Services Division  
2200 Churchill Road  
Springfield, Illinois 62706



IT IS SO ORDERED.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above Opinion and Order was adopted on the 9<sup>th</sup> day of January, 1986, by a vote of 7-0.

Dorothy M. Gunn  
Dorothy M. Gunn, Clerk  
Illinois Pollution Control Board