

The actual production of aluminum involves a number of steps. To a furnace containing a "heel", or quantity of unre-moved, molten aluminum, sufficient scrap is charged in accordance with a "heat plan." Various ranges were presented in the Record for charging times, depending on the particular furnace involved.

Respondent's typical reverberatory furnace operation starts with the heat release occurring above the molten metal. The heat of the flame is transmitted to the metal by direct and indirect radiation. The molten metal overflows into the bottom of the charging well, where the heat of the molten metal is used to melt the scrap charge.

The scrap aluminum is melted before it is added to the main puddle of molten aluminum. The gases and other foreign materials from this melting process are gathered by a hood over the melting area. With each scrap charge Respondent adds approximately 7% by weight of fluxing salt which consists of 47.5% sodium chloride, 47.5% potassium chloride, and 5% sodium aluminum fluoride to remove non-metallic particles.

This is followed by "alloying" or the addition of silicon hardening agents. The next step, "demagging" involves the addition of aluminum fluoride to remove magnesium. At the end of the furnace cycle a mixture of nitrogen (85%) and chlorine (15%) is bubbled through the liquid aluminum for "degassing" purposes. After this operation, the furnace is tapped and the aluminum is formed in ingot molds.

In the course of the hearings, extensive testimony was adduced by both Complainant and Respondent concerning mathematical calculations in the nature of material balances, the object being a showing of whether Respondent's operation was in compliance with Rule 3-3.111 of the Rules and Regulations Governing the Control of Air Pollution. In addition, Complainant attempted to show non-compliance with Rule 3-3.111 by calculations based upon Table 7-8, Particulate Emission Factors for Secondary Aluminum Operations, published by the United States Environmental Protection Agency in its Compilation of Air Pollutant Emission Factors (see Complainant's Exhibit #3).

Finally, Respondent's Exhibit #5 and #6 were admitted by stipulation of the parties. Respondent's Exhibit #5 is the report of particulate emission stack tests performed in September of 1973 by F. R. Kin and Associates, Inc., retained by Respondent. Complainant's representative observed the testing procedure. Respondent's Exhibit #6 is a Report on the Efficiency Of A Scrubber For Aluminum Smelting "Demag" Emission Control. This report details the results of tests performed on Respondent's Venturi scrubber by the Chicago Department of Environmental Control in August of 1973. Both report show Respondent's operation to be well within applicable emission standards. Complainant's Brief (p.4) states that "[a]s demonstrated

by Respondent's Exhibits Nos. 5 and 6, emissions were reduced to acceptable levels after afterburner and scrubber devices were installed on the various processes."

Granting, then, that Respondent's operation is now in compliance, Complainant alleges that from September 23, 1971 to approximately September of 1973, when the control devices became operational, Respondent operated in violation of Rule 3-3.111. As observed above, the greater portion of testimony and exhibits admitted by the parties pertained to material balance calculations. On page 7 of its Brief, Complainant states as follows:

"Since the material balance calculations themselves contain arguable assumptions, and since emission factors and stack tests are available to the Board, the material balances, presented by both sides, should not be relied upon in this case."

Complainant attempted to prove violation of Rule 3-3.111 by application of the USEPA particulate emission factors cited above. Complainant's theory is summarized on page 4 of its Brief as follows:

"As stated in Complainant's Exhibit No. 3, p. 7-11, Table 7-8, emissions from the uncontrolled production of secondary aluminum in reverberatory furnaces are 4.3 lbs/ton. The allowable emission rate according to Table I, Chapter III of Rule 3-3.111 is 4.1 lbs/ton. This indicates that no matter what process weight rate is employed by Apex, they will always emit excessive particulates."

The Board notes, however, that the comment immediately preceding Table 7-8 is as follows:

"Emissions ³² - Emissions from secondary aluminum operations include fine particulate matter and gaseous chlorine. A large part of the material charged to a reverberatory furnace is low-grade scrap and chips. Paint, dirt, oil, grease and other contaminants from this scrap cause large quantities of smoke and fumes to be discharged. Even if the scrap is clean, large surface-to-volume ratios require the use of more fluxes, which can cause serious air pollution problems. Table 7-8 presents particulate emission factors for secondary aluminum operations."

Respondent protests that Table 7-8 is not applicable to its operation since Respondent affirmatively alleges that the material charged to its furnaces is not "low-grade" and, further, that the Complainant failed to prove that said material was "low-grade." This Board has traditionally accorded to the findings of AP-42 significant evidential weight. However, the futility and peril of comparing dissimilar operations is manifest particularly when, as in the instant case, the emission rate predicted by Table 7-8 (4.3 lbs/ton) so closely approximates the standard of Rule 3-3.111 (4.1 lbs/ton).

Mr. Laxmi N. Kesari, one of Complainant's Environmental Protection Engineers and Complainant's chief witness at the hearings, testified that he visited Respondent's facility on four occasions during 1971-72-73. (R. 41). Mr. Kesari testified regarding his observations of the devices and procedures employed by Respondent to remove contaminants from scrap aluminum prior to charging. The direct examination of Mr. Kesari was, in pertinent part, as follows:

"Q I see. Were there materials besides aluminum in that scrap that you observed?

A Yes.

Q What types of materials?

A Copper, bronze, iron and such as paint, oil.

Q Is there two classes of materials, contaminants then?

A Yes, metallic and nonmetallic.

Q I see. What were the metallics?

A Copper, iron, bronze, lead.

Q Is that all?

A Well, there may be some others, too, but those are what at the time of my visit what I observed, some.

Q I see. What nonmetallics did you observe?

A Paint, oil, in some instances, some paper, cardboard.

Q With respect to the metallics, were they removed prior to smelting?

A Yes, on this sorting belt.

Q All the metallics were removed?

A I can't say all but some, definitely. It was manually hand sorted, so.

MR. SNEIDER: Manually and what?

THE WITNESS: Hand sorted.

MR. GUMBINER: Q Is that the only way they were removed?

A From there it would go to the magnetic removal, magnetic removal system.

Q Maybe it would be easier if you would describe in detail the metallic removal system, start from the beginning when the metal comes in?

MR. SNEIDER: Are we referring to what he observed?

MR. GUMBINER: Right.

MR. SNEIDER: Okay.

THE WITNESS: The metal, the scrap, it is started, the metal is sorted by hand on the belt and then it goes through a, under the crushing where it has high power magnet which removes all iron material, iron present in the scrap, and then it goes to the crusher.

MR. GUMBINER: Q And then what happens?

A Then it goes to the furnace.

Q Does it go through another hand sorting operation?

A After that, no. I didn't recall it.

Q In your opinion, would such a system remove all material, all metallics besides aluminum?

A Do you mean the magnet? Which one? I am --

Q Just answer my question?

A Will you repeat your question?

Q Would such a system remove all metallics besides aluminum?

A No.

Q How were the nonmetallics removed, or were they removed?

A No.

Q No what?

A It won't remove nonmetallics with the magnet.

Q Did you observe anybody removing nonmetallics?

A Such as paper, cardboard, yes, with the hand sorting of it.

Q Did any of the nonmetallics go into the furnaces?

A Yes.

Q Which ones went into the furnaces without being sorted?

A Some paint, oil present on the parts.

Q Is that all?

A Yes.

Q Just paint and oil?

A Yes.

Q Paint and oil were the only nonmetallics that went into the furnaces, is that right? That's just what you said, is that right?

A Yes, and other -- Yes, nonmetallics, yes.

Q Those are the only-- I want to get this clear now. The only nonmetallics going into the furnaces were paint and oil -- (R. 73-76).

Respondent's Exhibit #7, is the 119-page deposition of Respondent's employee Raymond A. Di Gerolomo, employed by Respondent for 34 years, who testified in depth as to the care that Respondent gives in buying clean, high-grade scrap, sorting out contaminants; crushing scrap; magnetically separating ferrous metals; cycloning out dirt; rejecting extraordinary dirty scrap; testing scrap for contaminants; and only charging to the furnace a high-grade, relatively contaminant-free scrap.

Mr. Di Girolamo testified as follows:

"Q What would you describe your duties as, are these two separate positions, Receiving Foreman and Processing Foreman?

A No, it's part of the job.

Q All right, will you tell us what your duties are?

A First the duties are to receive the material. After it is received, we decide whether it needs processing or use as is. This is solid waste we receive and we decide at that point whether it has to be processed when we receive it. So after it is received, then it is decided it has to be processed, then we take it to our sorting, our processing operation.

The material is put on a belt and spread quite evenly; and then a sorter sorts the material from the belt, foreign material such as zinc, wood, paper or magnesium material that would be hard to remove from our aluminum alloy. Then after they sort that out, it goes on another conveyor which brings it into the crushing operation.

This crusher shreds it up to about the size of your fist or smaller. It is then brought up over a double screen, the material goes over the double screen, and from the double screen it takes out the small particles of dirt or small particles of metal; and then it goes on to another conveyor belt which separates the iron from the aluminum.

The iron goes in one container and the aluminum goes into another." (Respondent's Exhibit #7, pp. 3,4).

And, further:

"Q And that is the extent of your duties?

A Well, I also inspect the material as it comes in. I inspect it on the belt to see how bad it is or how good it is; and I also reject-- if the material doesn't meet up to my standards, I reject the material right off the bat." (Respondent's Exhibit #7, p. 5).

Similarly, William Scrimminger, Respondent's plant manager, described the procedures employed by Respondent prior to charging to the furnaces, including the use of the borings dryer, afterburner, settling chamber, crusher, cyclone, hand sorting, screening, magnetic removal, and outright rejection of material. (R. 450-52).

Mr. Scrimminger testified as follows:

"Q What kind of treatment do you give to the various categories after receipt of the material has been, has taken place at the plant?

A The borings will be passed through a crusher to break them up, make them free-flowing, thence through a rotary drum drier where the oil is burnt off them and thence over a screen to remove fines, over a magnetic separator to remove magnetic iron, thence into a box for storage prior to being charged to the furnaces.

The cast and sheet when received will be loaded onto a hand sorting belt where large nonmetallic pieces, nonmetallic paper, wood and plastic may be removed prior to the hand sorting belt. On the hand sorting belt, further plastic and paper will be picked out by hand and as many nonaluminum metals as is desirable and possible. Stainless steel will be hand picked out; copper will be hand picked out; zinc will be hand picked out.

Thence the material will be crushed to remove any mechanically attached magnetic iron, thence over a screen to remove on some occasions sand, thence over a magnetic separator to remove magnetic iron, into a storage box for storage prior to charging to the furnaces." (R. 451-52).

Mr. Scrimminger further testified that of the approximately 6,000,000 pounds of scrap per month received by Respondent, 600,000 pounds is discarded or otherwise not charged to the furnaces as a result of contaminant removal procedures. (R. 453-55). Mr. Scrimminger stated that potential smoke producing material is charged to the furnace slowly and smothered with clean borings to entrap the potential smoke in the melt, all allegedly in an effort to reduce emissions. (R. 465).

Mr. Daniel M. Moenich, Respondent's President, testified, as regards the quality of scrap, as follows:

"MR. SNEIDER: Q Referring to the Taylor Street operation, what, if any, reasons do you have for the unprofitability of the Taylor Street operation?

A Part -- Part of the unprofitability, a large part of it today is planned. We -- Until we have our pollution control equipment installed and operating properly, we have been restricting the amount of scrap that has been charged into the furnaces, and by this restriction, we eliminate the pollution that may have been generated if we were charged to our normal practice.

Secondly, we have been by plan again buying a more premium grade of scrap, one that has less contaminants, a type of scrap that is much cleaner than you would normally have in an operation. The scrap in charging into the furnaces does not pollute, pollute the air. Therefore, this is the kind of scrap that has been directed to buy.

Q Would there be any other reasons besides the two that you have just given?

A There were other reasons earlier but we have put a lot of money into the operation to make it much more economical from an equipment standpoint.

Q As president of Apex, what plans, if any do you have to correct this unprofitability?

A First of all, we have a high priority on, on finishing the pollution control equipment that was designed for the plant. This pollution control equipment should be completed by approximately August 1st. When it is completed, we will improve our charging rate. We will charge more metal into the furnace. We will buy a different type of scrap that's less costly. And we will add a conveyor which will improve the utilization of our furnace equipment. Now, the conveyor will be on only one part of the facility. (R. 400-402).

Counsel for Complainant cites EPA v. Lindgren Foundry Co., PCB 70-1 for the proposition that standard emission factors may be used to show a prima facie case of violation. (R. 462). We agree. [See also PCB 71-4, PCB 71-33 (consolidated) and PCB 71-297, PCB 71-335 (consolidated)]. However, it is also true that substantial affirmative evidence that the specific pollution source involved or the circumstances relating to its operation are such as to make said source substantially different from the elements considered in the standard emission factor computation will shift the burden of proof to the party proffering the standard emission factors. In George E. Hoffman and Sons v. Illinois Pollution Control Board et al., decided December 28, 1973 by the Illinois Appellate Court, Third District, the court specifically rejected the contention of the Environmental Protection Agency that once standard emission factors are introduced, it then becomes the burden of the opposing party to prove it was not violating the regulation (3-3.111).

In the instant cause, Respondent has introduced substantial affirmative evidence tending to show that the standard emission factors relied upon by Complainant are not applicable to Respondent's operation. Complainant has not met its burden of proving the contrary. While we cannot find conclusively, from the Record, that Respondent charges "high-grade" material into its furnaces, evidence that Respondent charges "low-grade" material is almost totally lacking.

Complainant's final allegation is that Respondent violated Section 9(b) of the Act. Respondent admits to the "commencement of the installation of pollution control devices without a permit issued by the State of Illinois." (R. 5). However, Respondent argues that it was forced to install the pollution control equipment by action of the Chicago Department of Environmental Control which body exercises concurrent jurisdiction with Complainant over Respondent. Respondent alleges that it complied with the requirements of the Act by repeatedly filing application for construction permits for installation of what proved to be a successful plan and that Complainant on each occasion arbitrarily and without justification refused to issue the requested permits — this, notwithstanding the fact that the Chicago Department of Environmental Control had granted construction permits to Respondent for the same pollution control program.

Mr. William C. Shirley, Respondent's Director of Engineering since 1968, testified to his efforts, on behalf of Respondent, to obtain construction permits from the Chicago and state authorities. (10/18/73 R. 9-14). Mr. Shirley stated that he began the design of the subject pollution control equipment in 1968. He testified that, in coordination with the Chicago Department of Environmental Control, he developed a very detailed control program which was subsequently approved and accepted by the Chicago body. (10/18/73 R. 10). As regards Mr. Shirley's dealings with Complainant, Respondent's Exhibit #8 was admitted and stipulated to by Complainant in the interest of saving time. (10/18/73 R. 13).

Respondent's Exhibit #8 is a six-page log detailing Respondent's correspondence with Complainant covering the period from September 1, 1971 to January 5, 1973. It is noted that although Complainant stipulated to the admission of the log, Complainant did not stipulate to any conclusions stated therein.

An examination of the fifty-three (53) entries in the log satisfies this Board that Respondent's inability to obtain the requisite construction permits from Complainant was not due to intent or negligence attributable to Respondent. Respondent was already committed to a \$400,000 control program with the Chicago authorities, and stack testing has proven that program successful. (R. 402,403).

We cannot perceive that Respondent had anything to gain from the lengthy negotiations it carried on with Complainant. It appears that Respondent's control program, being a major and complex undertaking, simply required a great deal of time to work through Complainant's application procedures. Complainant offered no evidence on this point.

Respondent cites to us Southern Illinois Asphalt Company, Inc. v. Environmental Protection Agency, 303 N.E. 2d 606 (1973), allegedly for the proposition that a Section 9(b) violation must be intentional. Respondent has misconstrued the Court's holding and, in any event, the cited decision is not on point.

We find, therefore, that Respondent has violated Section 9(b) of the Act. However, we have sympathy for Respondent's plight - having made commitments to the Chicago Department of Pollution Control on one side, and facing a protracted application procedure with Complainant on the other. On the basis of the testimony presented and Respondent's Exhibit #8, this Board is satisfied that Respondent proceeded in good faith through the application procedure and that no purpose would now be served by assessment of a penalty - especially, as noted above, where the control program proved successful.

In summary, Complainant admits it has not established a Section 9(a) violation; we find that Complainant failed to meet its burden of proof as regards the Rule 3-3.111 allegations - particularly in view of Respondent's Exhibit #10 and the testimony pertinent thereto; and we find Respondent has violated Section 9(b), for which no penalty will be assessed.

We feel that some of the evidence proffered by Complainant tends to show violation of Rule 3-3.111. However, this Board cannot enter decisions on feelings. Complainant must prove its case.

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

IT IS THE ORDER of the Pollution Control Board that:

1. All charges against Respondent relating to alleged violations of Section 9(a) of the Environmental Protection Act and Rule 3-3.111 of the Rules and Regulations Governing the Control of Air Pollution are dismissed.

2. Respondent is found to have violated Section 9(b) of the Environmental Protection Act for which no penalty will be assessed due to mitigating circumstances.

I, Christan L. Moffett, Clerk of the Illinois Pollution Control Board, certify that the above Opinion and Order was adopted on this 25th day of March, 1974 by a vote of 5-1.

Christan L. Moffett