BEFORE THE ENVIRONMENTAL BOARD OF REVIEW
STATE OF OHIO

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| MARY LEE VANDEVANDER, ET AL. | : | Case no. EBR 892327-892329 |
| | : | and 892334 |
| Appellants, | : | |
| SAVE OUR COUNTY | : | |
| | : | |
| Intervenor-Appellant, | : | |
| v. | : | |
| | : | |
| DONALD SCHREGARDUS, DIRECTOR | : | |
| OF ENVIRONMENTAL PROTECTION, ET AL. | : | Issued on: May 30, 1996 |
| | : | |
| Appellees. | : | |

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FINDINGS OF FACT, CONCLUSIONS OF LAW AND
FINAL ORDER

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Issued By:

ENVIRONMENTAL BOARD OF REVIEW

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This matter comes before the Environmental Board of Review ("EBR" or "Board") upon an appeal by Mary Lee Vandevander, Elaine McClung, Susan Bennett, Jeffrey Bennett and Let's Improve Valley Environment ("LIVE")[1] of an action of the Director of the Ohio Environmental Protection Agency ("Director," "OEPA" or "the Agency") wherein a permit change request submitted by Appellee Waste Technologies Industries ("WTI") was classified as a revision rather than a modification. In addition to the Director and WTI, the notice of appeal named Northern Ohio Valley Air Authority ("NOVAA") as a co-appellee. Finally, on December 11, 1990, the Board granted Save Our County, Inc. ("SOC") intervenor-appellant status in this matter.

A de novo hearing was held before the full Board on July 12-14 and September 7-8, 1994. Appellants Vandevander, McClung, Bennett and LIVE were represented by Mr. Jeffrey A. Kodish and Mr. Robert J. Shostak of Sowash, Carson & Shostak, Athens, Ohio. Intervenor-Appellant SOC was represented by Mr. Joseph M. Reidy of Samuels & Northrup Co., LPA, Columbus, Ohio. Appellee WTI was represented by Ms. Martha Horvitz, Mr. Charles H. Waterman III, Ms. Bernadette J. Bollas and Mr. James Hughes of Bricker & Eckler, Columbus, Ohio. Appellees Director and NOVAA

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[1] The notice of appeal was originally filed by LIVE, Mary Lee Vandevander, Elaine McClung, Susan Bennett, Jeffrey Bennett, Marilyn Allison, Karen Trimble, Joy Allison and Edith Barnhart. On July 20, 1992, Appellee WTI filed a Motion to Dismiss the appeals of Marilyn Allison, Karen Trimble, Joy Allison and Edith Barnhart for failure to prosecute the appeal, or, alternatively, to require that these individual appellants indicate whether they intended to participate in the appeal. These parties failed to respond to WTI's Motion to Dismiss, as well as a subsequent order issued by the Board. Accordingly, on December 16, 1992, the Board dismissed these parties from the instant action.

were represented by Lauren C. Angell and Jackie Mallett, Assistant Attorneys General.

Based on the evidence adduced at the de novo hearing, the pleadings and briefs of the parties and the Certified Record ("CR") filed with the Board pursuant to R.C. 3745.05, the Board makes the following Findings of Fact, Conclusions of Law and Final Order.

## FINDINGS OF FACT

### CHRONOLOGY OF EVENTS CULMINATING IN INSTANT ACTION

1. Appellee WTI is a hazardous waste treatment, storage and disposal facility located in East Liverpool, Columbiana County, Ohio. (Certified Record ["CR"] Item Number 8)

2. During September of 1981, Appellee WTI submitted an application for a hazardous waste facility installation and operation permit to the OEPA. Appellee submitted additional application documents on July 23, 1982 and revised application documents on November 17, 1982, which superseded the earlier documents. (Appellee Director's Ex. 2)

3. The application, as amended, was reviewed by the OEPA's Division of Hazardous Materials Management and was determined to be complete. Accordingly, on November 19, 1982, the Director of the OEPA transmitted the application to the Hazardous Waste Facility Approval Board ("HWFB").[1] (Appellee Director's Ex. 2)

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[1] At the time this permit was issued, this Board was called the Hazardous Waste Facility Approval Board. The name was subsequently changed to Hazardous Waste Facility Board, which is what it shall be referred to throughout the instant decision.

4. A public hearing regarding the application was held in East Liverpool on January 25, 1983. (Appellee Director's Ex. 2)

5. Subsequently, an adjudication hearing was conducted by the HWFB, acting through its hearing examiner, commencing on March 17, 1983 and concluding on April 8, 1983. (Appellee Director's Ex. 2)

6. On April 27, 1984, the HWFB issued a Hazardous Waste Installation and Operation Permit to WTI. (Appellee Director's Ex. 1)

7. On March 27, 1990, Edwin Lim,[3] the Manager of the RCRA Engineering Section, Division of Solid and Hazardous Waste Management of the OEPA met with representatives of WTI to discuss a number of changes and additions being proposed by WTI for the East Liverpool facility that were inconsistent with the terms of the 1984 permit. (Hearing Transcript ["HT"], Vol. I, pp. 73-74[4])

8. As a result of this meeting, on April 29, 1990, Robert M. Mitchell, WTI's Project Manager for the East Liverpool facility, submitted a letter and attached list outlining changes which had been made in the design of the plant which did not "specifically match either the permit description or the construction plans previously submitted to OEPA." Mitchell requested that Lim, ". . . review these changes and advise WTI of what steps are needed, if any, to continue with the project on the revised design basis." (Appellant's Ex. 1)

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[3] Mr. Lim possesses a Bachelor of Engineering degree, in chemical engineering and a Juris Doctorate. Prior to his current position, Mr. Lim served as an environmental scientist in the Division of Air Pollution Control at the OEPA Central Office, as an engineering unit supervisor in the Division of Solid and Hazardous Waste Management and as a technical advisor and acting Executive Director for the HWFB. (HT. Vol III, p. 35)

[4] Due to technical difficulties with the recording equipment of the Board, it became necessary for the parties to have the first three days of the hearing transcribed and corrected. Accordingly, all citations to Hearing Transcript Volumes I, II and III are to the corrected version.

9. On June 11, 1990, Lim responded to Mitchell by pointing out that:

> As you may know OAC Rule 3745-50-51, requires that 'a hazardous waste facility permit may be modified or revised at the request of the director or upon written request of the permittee for the following reasons: (1) The permittee desires to accomplish alterations, additions, or deletions to the permitted facility, or to undertake alterations, additions, deletions, or activities that are inconsistent with or not authorized by the existing permit.'

Mr. Lim continued by stating that " . . . it is quite apparent that these changes are alterations to the permitted facility that are inconsistent with the existing permit." In view of this conclusion, Mr. Lim requested that ". . . WTI supply the Ohio EPA with a formal permit change request regarding the enhancements to the facility. . ." (Appellant's Ex. 2; HT, Vol. III, p. 39)

10. On July 9, 1990, pursuant to Lim's request, Mitchell submitted a formal permit change request to the OEPA. The permit change request listed 8 deviations from the permitted design. The first item listed, and the only item which is relevant for the purposes of this appeal, was the proposed addition of a flue gas evaporative quench, hereinafter referred to as a "spray dryer".[5] (Appellant's Ex. 3)

11. The spray dryer was described in an attachment accompanying the permit change request as follows:

> WTI is adding a spray dryer to the incineration system equipment. This specific spray dryer simply evaporates scrubber blowdown in the hot flue gas stream leaving the

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[5] In its original notice of appeal Appellants raised a number of issues relating to the eight items contained in Appellee's permit change request. However, in a Prehearing Statement filed by the Appellants and Intervenor on March 18, 1994, they agreed to limit the scope of this appeal "to issues involving the Director's decision to classify the addition of a spray dryer as a revision."

> boiler. The evaporation produces a dry salt which is captured in the electrostatic precipitator and the wet scrubber, with a slight amount collecting in the bottom spray dryer hopper. The spray dryer does not contribute to acid gas cleaning, all gas cleaning continues to take place in the scrubber. The ESP and the scrubber are sized to account for the addition of a spray dryer. The spray dryer, in evaporating the scrubber blowdown liquid, produces a greatly reduced volume of dry salts and eliminates the need to truck liquid wastes from the facility. As shown on the process flow diagrams which were transmitted to OEPA at our March 27, 1990 meeting, the addition of the spray dryer does not change the emissions from the incinerator. The unit will continue to operate below the permit emissions limitations with the addition of the spray dryer. (Appellant's Ex. 3)

12. WTI further explained the reason for the deviation thusly:

> The spray dryer, in evaporating the scrubber blowdown liquid, produces a greatly reduced volume of dry salts compared to the volume of scrubber liquid. This evaporation results in dry salts which are safer and easier to handle than the scrubber liquid and which eliminate the need to truck liquid wastes from the facility. (Appellant's Ex. 3)

13. WTI's formal permit change request was accompanied by the following items relative to the spray dryer:

1. A vendor drawing detailing the spray dryer and precipitator arrangement.
2. A list of the design criteria for the spray dryer.
3. A flow diagram for the spray dryer.
4. Process flow diagrams of the incinerator through to the stack. (Appellant's Ex. 3)

14. Edwin Lim and Paul Anderson,[6] a supervisor in the Division of Hazardous Waste Management, Northeast District Office, OEPA, were the individuals at the

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[6] Mr. Anderson possesses a Master of Science degree in aquatic ecology. Prior to his current position, Mr. Anderson was an environmental specialist in the Division of Hazardous Waste Management. Mr. Anderson testified that he has conducted approximately 150 inspections of hazardous waste facilities during his time at OEPA and he has been to the WTI facility approximately 100 times. (HT. Vol. IV, pp. 13-15, 28)

OEPA who reviewed WTI's permit change request. Ultimately, both Lim and Anderson recommended to the Director that he classify the permit change request as a revision rather than a modification. (HT Vol. III, p. 36; HT VOL. IV, pp. 33-36)

15. On October 11, 1990, the Director sent notification to Mr. Mitchell that WTI's request for changes to its Ohio Hazardous Waste Installation and Operation Permit had been classified as a revision. (Appellant's Ex. 4)

16. On October 20, 1990, public notice of the issuance of the classification of WTI's permit change request was published in the Morning Journal, a newspaper of general circulation in Columbiana County. (CR 1)

17. On November 19, 1990, a notice of appeal was filed with the Board by the Appellants. Specifically, Appellants set forth the following assignments of error relative to the Director's classification of the spray dryer as a revision:

> 1. The Director should have classified the addition of a spray dryer to the incineration system as a modification pursuant to OAC 3745-50-51(C)(1)(c) and OAC 3745-50-51(C)(1)(g). This requested change would constitute different treatment or disposal methods than those previously authorized. The complexity of the proposed change presents an increased risk of hazards to the public health and environment. If any part of the spray dryer system fails, the facility will likely emit additional pollutants into the air.
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> 2. This proposed change involves the use of potentially toxic scrubber liquor rather than fresh water, to cool the flue gas. The mere use of scrubber liquor to cool the flue gas creates an increased risk of air pollution. Accordingly, the Director should have classified the proposed changes as a modification pursuant to OAC 3745-50-51(C)(1) and R.C. 3734.05(D)(6)(d).

3. The Director should have classified the addition of a spray dryer to the incineration system as a modification pursuant to OAC 3745-50-51(C)(1) and R.C. 3734.05(D)(6)(c). If the proposed changes are implemented, the facility would no longer represent the minimum adverse environmental impacts, considering the state of the available technology and the nature and economics of various alternatives, and other pertinent considerations.

4. This proposed change involves the addition of a spray dryer to the incineration system. Rather than using fresh water to cool the flue gas, the proposed change involves transporting potentially toxic scrubber liquor to the spray dryer and its associated support system. The transport mechanism creates an additional risk of soil contamination, ground water contamination, and surface water contamination. As set forth in Paragraph A.1., this proposed change will also create an increased risk of air pollution. Accordingly, the Director should have classified the proposed changes as a modification pursuant to OAC 3745-50-51(C)(1) and R.C. 3734.05(D)(6)(d).

5. Since the spray dryer uses scrubber liquor as the evaporating agent, it will only operate as planned if the scrubber is functioning properly. Even if a back up system exists, the complexity of this system will increase the risk of air pollution and impact on the public health and safety because the flue gas may not be properly cooled.

6. The addition of the spray dryer should require WTI to recalculate their emissions model. If this is not done, or is done improperly, the proposed change would increase the risk of air pollution and impact on the public health and safety.

7. For the reasons set forth above, and for other reasons which may be revealed during discovery, the Director should have classified this proposed change as a modification pursuant to 3745-50-51(C)(1) and R.C. 3734.05(D)(6). (Emphasis in original.)

18. In addition to the grounds enumerated in the Notice of Appeal, members of LIVE and SOC testified at the hearing that they felt they were adversely

affected by the Director's decision to classify this as a revision rather than a modification because the addition of the spray dryer would increase the emissions from the facility and they preferred that the matter go before the HWFB for review. (HT Vol. I, pp. 53-54, 56-57, 61-62, 68, 69; Stipulations of the Parties to testimony of Virgil Reynolds, Elaine McClung and Jeffrey Bennett)

THE HAZARDOUS WASTE INCINERATION SYSTEM

19. The WTI hazardous waste incineration facility at issue herein consists of nine (9) major components, as constructed. (Appellee WTI's Ex. 4)

20. The first major component of the facility is the waste feed system which is used to introduce waste materials (bulk solid materials, drummed wastes and pumpable materials) into a rotary kiln.[7] Combustion air is also provided at this point to mix with the wastes. (Appellee WTI's Ex. 4, HT Vol. II, p. 32)

21. The waste is then incinerated in the rotary kiln at a temperature of approximately 2500 degrees Fahrenheit[8]. The ash material contained in the waste melts and is discharged as a liquid. This then goes through a slag quench tank before it is discharged as kiln slag. This constitutes the first of three discharge points in the system. (Appellee WTI's Ex. 4, HT Vol. II, p. 32)

22. The flue gas then moves vertically upward into a secondary combustion chamber. At this point the gas is mixed with additional combustion air in order to maximize incineration. (Appellee WTI's Ex. 4; HT Vol. II, p. 32)

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[7] Although there is a mechanism for introducing wastes directly into the secondary combustion chamber, it is not currently in use and it is not relevant for the instant case.

[8] All references herein to temperature are in terms of the Fahrenheit scale.

23. Water is then added to the flue gas to quench it to an acceptable temperature for entrance into the heat recovery boiler (approximately 1400 degrees). In the heat recovery boiler the flue gas is further cooled from the inlet temperature of 1400 degrees to an outlet temperature of approximately 700 degrees. (Appellee WTI's Ex. 4; HT Vol. II, pp. 32-33)

24. The flue gas then enters the spray dryer which performs two functions: the further cooling of the flue gas and the evaporation of scrubber effluent. Specifically, flue gas leaving the boiler is introduced into the top of the spray dryer through a gas disperser. Liquid scrubber effluent is injected into the spinning flue gas and atomized by means of three high speed rotary atomizers. The atomized scrubber effluent cooks the flue gas by evaporation of the water in the effluent, a process which takes place in the drying chamber. Solids in the effluent are dried and entrained in the flue gas. Large particulate matter is removed in the spray dryer by the centrifugal force resulting from the change in direction of the flue gas flow as it leaves the dryer. Smaller particulate matter is entrained by the flue gas and later removed in the electrostatic precipitator, which is the next stage of the system. The larger particulate matter, which is separated from the flue gas in the spray dryer, is removed from the bottom of the spray dryer through an air lock system and into the second discharge point, the fly ash hoppers. (Appellee WTI's Ex. 4, 6)

25. From the spray dryer, the flue gas proceeds to an electrostatic precipitator, the first step of the air pollution control system. At this point, remaining particulate matter greater than one micron in diameter is removed and discharged into the same fly ash hoppers into which the larger particulate matter removed in the spray dryer is discharged. (Appellee WTI's Ex. 4; HT Vol.

II, pp. 33, 37, 46)

26. From the electrostatic precipitator the flue gas enters the first stage of a four stage wet scrubber (the quench) where the gas is saturated through the injection of a large volume of liquid, thus reducing the temperature of the flue gas to approximately 160 degrees. The gas then enters the scrubber tower. (Appellee WTI's Ex. 4; HT Vol. II, pp. 33-34)

27. The scrubber tower itself consists of three stages: 1) a packed bed for the removal of hydrochloric acid (HCL); 2) a packed bed for the removal of sulfur dioxide (SO2); and 3) a venturi system to remove particulate matter of less than one micron. The flue gas enters the scrubber tower from the bottom and liquid is injected over the top. As the liquid trickles down through the packing and contacts the flue gases it absorbs hydrochloric acid and sulfur dioxide in the gas. (The scrubber water is blowndown and recirculated at three points in the scrubber tower.) As the water trickles down the scrubber tower it gets dirtier and the flue gas gets cleaner. Ultimately, the scrubber liquid which has picked up the most contaminants is recirculated in the quench to saturate the flue gas. Some of the water is then circulated to a neutralization system consisting of three tanks. In this system lime is added to neutralize the liquid to a Ph of 7 and activated carbon is added to control mercury emissions. This mixture is then injected into the spray dryer where the water is evaporated. With the evaporation of the water, the contaminants that were captured in the scrubber liquid end up as particulate matter suspended in the flue gas. Once again, the large particles drop out through the bottom of the spray dryer vessel at the second discharge point of the system, discussed above. The smaller particles, which are still greater than one micron, will be removed in the next stage, i.e.,

the electrostatic precipitator. The very fine particles are ultimately removed in the last stage of the scrubber tower. (HT, Vol. II, pp. 37-41, 46)

28. The next major component of the system is an induced draft fan which is designed and sized to maintain negative air pressure in all areas of the incineration system upstream of the fan, thus preventing fugitive emissions from the incinerator. (Appellee Director's Ex. 2, p. 91)

29. Finally, the flue gas is reheated to a temperature of approximately 190 degrees before being emitted from the stack. The temperature of the gas exiting the stack is monitored continuously, i.e., every couple of seconds. (HT. Vol. II, p. 108; Appellee Director's Ex. 2, p. 92; Appellee Director's Ex. 6)

SYSTEM PURSUANT TO 1984 PERMIT COMPARED TO SYSTEM INCORPORATING ITEMS CONTAINED IN PERMIT CHANGE REQUEST

30. At the hearing, Alfred Sigg, the Vice President of Compliance for Von Roll America and the Vice President of Technology for Von Roll, Inc.[9] explained the differences in the incineration system as it presently exists and the system prior to the approval of the permit change request to include the following:

1. The spray dryer was added between the boiler and electrostatic precipitator, thus eliminating the need to transport liquid scrubber blowdown from the facility and leaving a smaller volume of solid material with which to deal.
2. The induced draft fan was moved from between the electrostatic precipitator and the scrubber to after the scrubber in order to provide negative pressure in the entire system, thus increasing the system's safety and maintainability.

[9] Von Roll, Inc. was responsible for proposing, developing and constructing the WTI facility.

3. Tubes in the last section of the boiler were removed, thus increasing the boiler exit temperature from 480 degrees to approximately 700 degrees.
4. The final stage of the wet scrubber (the ring jet or venturi stage) was added in order to remove submicron particulate matter. (HT, Vol. II, p. 16, pp. 42-44)

31. Mr. Sigg summarized WTI's rationale for proposing these four changes as follows:

> . . . all of these changes were proposed at the time because they represented developments that had been tested and proven to be effective in the 10 years since the application had been originally filed. So we all viewed those as technical improvements to the system because they help reduce the emissions in the stack. (HT Vol. II, pp 44-45)

32. More explicitly, Mr. Sigg explained that increasing the boiler exit temperature of the flue gas, in conjunction with the rapid quenching of the gas in the spray dryer, was done to reduce the likelihood of the formation of dioxins. In this regard, Mr. Sigg outlined the three things which must occur for dioxins to form: 1) an organic compound must be present to act as a precursor; 2) a catalyst must be present to catalyze the reaction; and 3) a temperature range between 450 degrees and 700 degrees must exist. Thus, by increasing the boiler exit temperature to 700 degrees[10] and rapidly quenching the temperature of the flue gas to 360 degrees once it passes into the spray dryer, an extended residence time at the critical temperature, i.e. 450 - 700 degrees, is avoided and the likelihood that dioxins will form is reduced. (HT Vol. II, pp. 43 - 44)

33. Mr Sigg also indicated that because of the addition of the spray dryer

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[10] The boiler exit temperature in the original application was 480 degrees, which falls squarely within the temperature range for expected dioxin formation.

there was some concern that mercury might revolatilize in the spray dryer and accumulate in the system.[11] To deal with this concern, activated carbon in a dry powdered form was added to the scrubber water in the neutralization system. The activated carbon adsorbs some of the mercury which is then removed in particulate form by the electrostatic precipitator, thus alleviating the concern that mercury might revolatilize in the spray dryer and accumulate in the system. (HT Vol. II, pp.53-54)

34. The process flow diagrams submitted with WTI's permit change request disclosed the fact that activated carbon was being fed to the neutralization system. Furthermore, testimony at the hearing indicated that the OEPA was aware of WTI's purpose in adding activated carbon to the system and that this fact was considered by the agency prior to a decision being made on WTI's permit change request. (HT Vol. II, pp. 53-54, pp. 117-118; HT Vol. IV, pp. 47-48, pp.161-164, 168-171, 185-188)

35. Mr. Sigg also explained that a malfunction or cessation of operation of the spray dryer would not result in increased air emissions. Specifically, Mr. Sigg testified that the spray dryer can continue to operate and maintain the appropriate outlet temperature with two, and possibly only one, of the three rotary atomizers contained in the spray dryer. If all three atomizers were to fail[12] the outlet temperature from the spray dryer would increase. Once the temperature exceeds 450 degrees at the outlet of the spray dryer, there is

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[11] There was no similar concern about the revolitation of metals other than mercury since they are not volatile at the temperatures which are prevalent in the spray dryer. (HT VOL. II, p. 57)

[12] Indeed, Mr. Sigg testified that the failure of all three atomizers was a "very nearly impossible occurrence, unless there were a total power failure." (HT Vol. II, p. 51)

an automatic instantaneous waste feed cut off which shuts the entire incinerator down. The residual gases which remain in the system after the shut down would continue to pass through the air pollution control system, so there would essentially be no increase in emissions from the plant even if the spray dryer were to malfunction or cease operating. (HT Vol. II, p. 51)

36. Mr. Sigg also testified that in designing the spray dryer they felt it was very important to maintain the stack exit temperature, the stack exit volume and anything to do with the combustion system as those items had been indicated in the 1982 permit application. (HT, Vol. II, p. 48)

OEPA REVIEW OF PERMIT CHANGE REQUEST APPLICATION FILED BY WTI

37. Edwin Lim and Paul Anderson were the individuals assigned to review WTI's permit change request and make a recommendation to the Director regarding the disposition of the request. (HT Vol. I, p. 131, HT Vol. III, p. 36, HT Vol. IV, pp. 13, 15, 28, 33-36)

38. Lim testified that prior to making his classification recommendation to the Director he reviewed the following items: the original permit issued to WTI by HWFB; the final order and opinion that was the basis of HWFB's issuance of its 1984 permit; the Part B application which is incorporated by reference through the permit; the permit change request and attachments submitted by WTI; and, the relevant statute (R.C. 3734.05(D)(6)) and regulation (OAC 3745-50-51(C)). (HT Vol. III, pp. 41-66)

39. Similarly, Paul Anderson testified that prior to making his recommendation to the Director he reviewed the following items: the permit change request submitted by WTI; the existing Part B application; the terms and

conditions in the HWFB permit and final order; the 1988 design drawing and process flow drawing depicting the facility as initially designed; the revised process flow drawings depicting the facility with the alterations contained in the permit change request incorporated; and the siting criteria contained in R.C. 3734.05(D)(6) and the examples of modifications set out in OAC 3745-50-51(C). (HT Vol. IV pp. 33-34; 36; 42)

40. At the hearing in this matter, Mr. Lim and Mr. Anderson both testified quite extensively regarding the siting criteria contained in R.C. 3734.05(D)(6) and the examples of modifications set out in OAC 3745-50-51(C) and their assessment of the relevance of these provisions to WTI's permit change request. (HT Vol. I, pp. 137-142; HT Vol. III, pp. 45-46, 53-66; HT Vol. IV, pp. 84-92)

41. Specifically, both Mr. Lim and Mr. Anderson determined that the addition of the spray dryer would not have an adverse impact upon the siting criteria contained in R.C. 3734.05(D)(6)(a) [the nature and volume of the waste to be treated, stored, or disposed of at the facility], since WTI was not requesting any change in the nature or volume of waste it was permitted to handle as a result of the addition of the spray dryer. (HT Vol. I, pp. 138-139; HT Vol. III, p. 53; HT Vol. IV, p. 84)

42. Both Mr. Lim and Mr. Anderson determined that the addition of the spray dryer would not have an adverse impact upon the siting criteria contained in R.C. 3734.05(D)(6)(b) [the facility complies with the director's hazardous waste standards], since compliance with such rules would be expected and required and there was no indication that the addition of the spray dryer would affect compliance. (HT Vol. I, p. 140; HT Vol. III, pp. 53-54; HT Vol. IV, p. 84)

43. Both Mr. Lim and Mr. Anderson determined that the addition of the spray

dryer would not have an adverse impact upon the siting criteria contained in R.C. 3734.05(D)(6)(c) [the facility represents the minimum adverse environmental impact, considering the state of available technology and the nature and economics of various alternatives, and other pertinent considerations] because the WTI facility would continue to meet the emission limits set by HWFB as representing the minimum adverse environmental impact.[13] (HT Vol. I, p. 140; HT Vol. III, pp. 45-46, 54, 128; HT Vol. IV, pp. 85, 153, 204-205; HT Vol. V, PP. 104-105)

44. Both Mr. Lim and Mr. Anderson determined that the addition of the spray dryer would not have an adverse impact upon the siting criteria contained in R.C. 3734.05(D)(6)(d)(i) [the facility represents the minimum risk of contamination of ground and surface waters] for the following reasons: the addition of the spray dryer would reduce the amount of liquid being handled by the facility thus minimizing the possibility of a spill; all the water in the system is maintained in above ground tanks and pipes which are easily inspected; the facility must comply with applicable impact standards; daily inspections of the area must be conducted; and, the incinerator area has secondary containment to avoid uncontrolled spills. (HT Vol. I, pp. 141-142; HT Vol. III, pp. 54-55, 85-86; HT Vol. IV, pp. 85-86)

45. Both Mr. Lim and Mr. Anderson determined that the addition of the spray dryer would not have an adverse impact upon the siting criteria contained in R.C. 3734.05(D)(6)(d)(ii) [the facility represents the minimum risk of fires or explosions from treatment, storage, or disposal methods] since the spray dryer

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[13] Mr. Sigg testified at the hearing in this matter that WTI was proposing to make other changes to the system that would upgrade the technology at the same time it proposed the addition of the spray dryer. (HT Vol. II, pp. 44-45)

is a wet quenching system which operates with water and, further, WTI was not requesting the approval of any additional processes or waste codes because of this addition which would impact negatively on this siting criteria. (HT Vol. III, p. 56; HT Vol. IV, p. 86)

46. Both Mr. Lim and Mr. Anderson determined that the addition of the spray dryer would not have an adverse impact upon the siting criteria contained in R.C. 3734.05(D)(6)(d)(iii) [the facility represents the minimum risk of accident during transportation of hazardous waste to or from the facility] and, indeed, likely would have a positive effect, since the waste being transported off site would be a solid, rather than a liquid, which is less of a risk to handle, and since there would be fewer truckloads being transported per day from the facility. (HT Vol. III, p. 56; HT Vol. IV, pp. 86-87)

47. Both Mr. Lim and Mr. Anderson determined that the addition of the spray dryer would not have an adverse impact upon the siting criteria contained in R.C. 3734.05(D)(6)(d)(iv) [the facility represents the minimum risk of impact on the public health and safety] since emissions would not be expected to exceed the emission limits in WTI's permit and, as discussed above, relative to the transportation issue, there would, in fact, be a smaller risk to the public health and safety due to the reduced volume of liquids being handled. (HT Vol. III, pp. 56-57; HT Vol. IV, p. 87)

48. Both Mr. Lim and Mr. Anderson determined that the addition of the spray dryer and, specifically, the use of scrubber liquor to cool the flue gas in the spray dryer, would not have an adverse impact upon the siting criteria contained in R.C. 3734.05(D)(6)(d)(v) [the facility represents the minimum risk of air pollution] since air emissions were not expected to exceed the emission limits

in WTI's hazardous waste permit. Furthermore, in the event that testing during the trial burn revealed exceedances of emissions limits, the OEPA could impose additional permit conditions and/or waste feed limits to reduce such emissions. (HT Vol. I, pp. 142-143; HT Vol. III, p. 57; HT Vol. IV, p. 87)

49. Both Mr. Lim and Mr. Anderson determined that the addition of the spray dryer would not have an adverse impact upon the siting criteria contained in R.C. 3734.05(D)(6)(d)(vi) [the facility represents the minimum risk of soil contamination] because: the amount of waste to be handled was being reduced; the facility had secondary containment to protect against soil contamination; and, air emissions were not expected to increase over the limits in WTI's permit and, thus, there would be no higher risk of contamination of the soils off site created. (HT Vol. III, pp. 57-58; HT Vol. IV, p. 87)

50. Both Mr. Lim and Mr. Anderson determined that the addition of the spray dryer would not have an adverse impact upon the siting criteria contained in R.C. 3734.05(D)(6)(e) [that the facility will comply with all applicable environmental rules and laws] since WTI would be required to obtain all necessary permits for the unit and would be expected to continue to comply with all statutes and regulations. (HT Vol. III, p. 58; HT Vol. IV, p. 87)

51. Both Mr. Lim and Mr. Anderson determined that the addition of the spray dryer would not have an adverse impact upon the siting criteria contained in R.C. 3734.05(D)(6)(f) [that the owner and operator of the facility has a requisite history of compliance] since there was no change in the owner or operator requested in the permit change request. (HT Vol. III, pp. 58-59; HT Vol. IV, p. 88)

52. Both Mr. Lim and Mr. Anderson determined that the addition of the spray

dryer would not have an adverse impact upon the siting criteria contained in R.C. 3734.05(D)(6)(g) [that active areas within new hazardous waste facilities where certain types of waste in specific quantities are stored, treated or disposed of, must not be located within specified distances from listed structures and areas] since there was no requested change to the types or volumes of wastes that the facility was permitted to handle or their location at the facility. (HT Vol. I, pp. 108-109; HT Vol. III, pp. 59-60; HT Vol. IV, p. 88)

53. Both Mr. Lim and Mr. Anderson determined that the addition of the spray dryer would not have an adverse impact upon the siting criteria contained in R.C. 3734.05(D)(6)(h) [that the facility is not located within the boundaries of a state or national park] since the location of the facility was not being changed. (HT Vol. III, p. 60; HT Vol. IV, p. 88)

54. Both Mr. Lim and Mr. Anderson determined that the addition of the spray dryer did not constitute a change or alteration to the hazardous waste facility or its operations which would fall within the example of a "modification" contained in OAC 3745-50-51(C)(1)(a) [a storage facility requesting authority to conduct treatment or disposal activities] since WTI was already a treatment and storage facility and the addition of the spray dryer was not viewed as an "activity". (HT Vol. III, pp. 61-62; HT Vol. IV, pp. 88-89)

55. Both Mr. Lim and Mr. Anderson determined that the addition of the spray dryer did not constitute a change or alteration to the hazardous waste facility or its operations which would fall within the example of a "modification" contained in OAC 3745-50-51(C)(1)(b) [a treatment facility requesting authority to conduct disposal activities] since WTI was not requesting authorization to do any disposal. (HT. Vol. III, p. 62; HT Vol. IV, p. 89)

56. Both Mr. Lim and Mr. Anderson determined that the addition of the spray dryer did not constitute a change or alteration to the hazardous waste facility or its operations which would fall within the example of a "modification" contained in OAC 3745-50-51(C)(1)(c) [a treatment or disposal facility requesting authority to conduct treatment or disposal methods which are different from those previously authorized and which may present a potential increased risk of hazard to the public health or environment] since WTI was not proposing to add a different or additional method of treatment; i.e., the treatment method for which WTI was permitted was incineration and the addition of the spray dryer was simply an enhancement to the incineration system which would handle the scrubber blowdown differently. (HT Vol. III, pp. 62-64; HT Vol. IV, pp. 89-91)

57. Both Mr. Lim and Mr. Anderson determined that the addition of the spray dryer did not constitute a change or alteration to the hazardous waste facility or its operations which would fall within the example of a "modification" contained in OAC 3745-50-51(C)(1)(d) [a treatment, storage, or disposal facility requesting authority to handle additional waste types which may present a potential increased risk of hazard to public health or environment] since WTI was not requesting authority to handle additional waste types over what they were already permitted to handle. (HT Vol. III, pp. 64-65; HT Vol. IV, p. 91)

58. Both Mr. Lim and Mr. Anderson determined that the addition of the spray dryer did not constitute a change or alteration to the hazardous waste facility or its operations which would fall within the example of a "modification" contained in OAC 3745-50-51(C)(1)(e) [a treatment, storage, or disposal facility requesting authority to handle additional operational capacity when such additional capacity may present a potential increased risk of hazard to the

public health or the environment] since WTI was not requesting additional operating capacity. (HT Vol. III, pp. 64-65; HT Vol. IV, p. 91)

59. Both Mr. Lim and Mr. Anderson determined that the addition of the spray dryer did not constitute a change or alteration to the hazardous waste facility or its operations which would fall within the example of a "modification" contained in OAC 3745-50-51(C)(1)(f) [a transfer of the permit from the permittee to another person] since WTI was not seeking to transfer the permit to another person with this permit change request. (HT Vol. III, p. 65; HT Vol. IV, pp. 91-92)

60. Both Mr. Lim and Mr. Anderson determined that the addition of the spray dryer did not constitute a change or alteration to the hazardous waste facility or its operations which would fall within the example of a "modification" contained in OAC 3745-50-51(C)(1)(g) [the catch-all clause which provides, "other changes or alterations which may present a potential increased risk of hazard to the public health or the environment as determined by the director"] because air emissions were not going to exceed the emission limits previously set by the HWFB in WTI's hazardous waste permit, there was no increased risk of a spill, and there was a very easy, legitimate mechanism to collect the residual waste of the system. (HT Vol. III, p. 65-66; HT Vol. IV, pp. 92-93)

61. Based upon their conclusions on each of the criteria cited above, both Mr. Lim and Mr. Anderson determined that WTI's request to add the spray dryer to WTI's incineration system should be classified as a revision. They rested their determinations primarily upon the fact that the addition of the spray dryer was not expected to increase air emissions above the limits contained in WTI's hazardous waste permit and that the validity of this conclusion would be

conclusively demonstrated by the trial burn which was to be conducted shortly after construction of the facility was completed. (HT Vol. III, p. 68; HT Vol. IV, pp. 42-43)

62. As summarized by Mr. Anderson:

> WTI was not asking for any increase in its stack emissions; they were not asking for any changes in the waste feeds that are going to be put in the system. They were simply asking for an engineering change in the internal apparatus of the system. It is incumbent upon WTI to meet the limitations and they have to prove that through the testing of the unit.
>
> As a secondary issue, we [i.e., the Agency] will get involved when we feel it is necessary to insure that the emission limitations are met, but . . . we will only get involved in making those internal management decisions when it impacts stack emissions. Otherwise, it is the permittee's job to make sure it runs correctly and it is designed properly. . . . (HT Vol. IV, p. 42)

63. Finally, Mr. Anderson testified that since making his recommendation he had not found any evidence that the addition of the spray dryer could have an adverse impact on the siting criteria and, therefore, he would make the same recommendation regarding this classification again. As he explained:

> . . . The data bear (sic.) out what the permittee had proposed to the agency and maintained to the agency that the addition of that unit would not result in emission limitation exceedance, and therefore, basically, my analysis of all the siting criteria that I went through before in testimony here would stay exactly the same. (HT Vol. IV, pp. 125, 140)

RESULTS OF TRIAL BURNS AND OTHER TESTS CONDUCTED AT FACILITY

64. Following completion of the WTI facility, an initial trial burn was conducted in March of 1993. (HT Vol. II, p. 58; Appellee WTI's Exhibit 7)

65. The trial burn was conducted at a steady state level, i.e., under worst

case operating conditions designed to stress the system. Specifically, WTI was allowed to stress the system up to 115 percent of the permit limitations. (HT Vol. IV, p. 106-108; HT Vol. V, p. 8)

66. In response to direction by U.S. EPA, WTI maximized (or "spiked") the metal concentration, including mercury, contained in the waste being fed into the front end of the kiln and also into the neutralization system during the trial burn. As a result, the system became overloaded and there was a failure to meet the mercury emission limit (1600 grams per 24 hour period) contained in WTI's permit on two occasions during the trial burn. (HT Vol. II, pp.163-165; HT Vol. III, pp. 10-13; HT Vol. IV, p. 108; Appellee Director's Exhibit 9)

67. On April 26, 1993, in recognition of these exceedances of the mercury emission limit, Deborah M. Rushin, the Environmental Manager for WTI, sent correspondence to the U.S. EPA and Ohio EPA in which she requested the imposition of a mercury feed limit. Specifically, Rushin stated:

> WTI's most restrictive emissions limit for mercury is 1600 grams per 24 hour period (Ohio EPA Permit to Operate 171502233 NOOl). WTI is proposing that a 1600 gram/day feed limit be imposed immediately. This limit would ensure compliance with the permits . . . (Appellee Director's Exhibit 9)

68. On April 28, 1993, David M. Wertz, on behalf of Paul Anderson at the OEPA, responded to Ms. Rushin by imposing a mercury feed rate at the WTI facility of not greater than 1600 grams per 24 hours. (Appellee Director's Exhibit 10)

69. On October 6 and 7, 1993, WTI conducted another stack test for mercury emissions which showed an overall average system removal efficiency for mercury of 97.4 percent. (Appellee WTI's Exhibit 8)

70. Even though there was not a limit in the HWFB permit for dioxins, WTI officials were also disappointed by the dioxin emission rate exhibited during the

March 1993 trial burn (approximately 180 nanograms). Specifically, the rate was higher than WTI felt the system could achieve and higher than the dioxin emission rate assumed by U.S. EPA in its phase I risk assessment of WTI. (Appellee WTI's Exhibit 7; HT Vol. II, p. 159; HT Vol. IV, p. 101, p. 119)

71. As a result, on May 3, 1993, WTI proposed the installation of an Enhanced Carbon Injection System ("ECIS") designed to reduce emission rates of organic substances, in particular dioxins and furans. (Appellee Director's Exhibit 8)

72. On May 26, 1993, WTI was notified by the OEPA that the proposed installation of the ECIS was a change to their permit requiring review under R.C. 3734.05 and OAC Section 3745-50-51. (Appellee Director's Exhibit 8)

73. On June 29, 1993, WTI requested that Ohio EPA issue Findings and Orders exempting WTI from the requirement to obtain a permit revision from Ohio EPA and authorizing the installation, "shakedown" (a period of calibrating, adjusting, evaluating, optimizing, and testing [not to include performance testing] of the ECIS system), testing and operation of the ECIS. (Appellee Director's Exhibit 8)

74. Following the receipt of additional information from WTI regarding the ECIS, the Director issued Findings and Orders on July 9, 1993, exempting WTI from the requirement to obtain a Hazardous Waste Facility Installation and Operation Permit revision prior to the installation and operation of the proposed ECIS. The Findings and Orders also imposed a dioxin emission limit of an average of 30 nanograms per dry standard cubic meter corrected to 7 percent oxygen. (Appellee Director's Exhibit 8)

75. In August of 1993, following installation of the ECIS, tests were

conducted to measure dioxin emissions. The results showed average emissions of dioxin of 13 nanograms per cubic meter corrected to 7 percent oxygen, well below the 30 nanogram limit which had been imposed in the Director's July 9, 1993 Findings and Orders.[14] (Appellee WTI's Exhibit 9)

76. Additionally, WTI subsequently conducted quarterly stack tests for dioxin emissions and they also tested for dioxin emissions during a trial burn in February of 1994. The results of these tests revealed dioxin emissions below 10 nanograms per cubic meter corrected to 7 percent oxygen. (HT Vol. IV, pp. 137-139; Appellee WTI's Exhibits 10, 11, 12 and 20)

77. WTI has also conducted tests for emissions of lead and particulate on a quarterly basis. All of the test results indicate that the emissions of particulate and lead are significantly below the emission limits contained in WTI's permit. (Appellee WTI's Exhibits 12, 13, 14, 15 and 20; HT Vol. II, pp. 100 - 102)

78. WTI has also conducted performance tests for the emission of other pollutants including metals, total hydrocarbons (THC), NOX, SO2 and HCL. All of the test results indicated that the emissions of these pollutants are significantly below the emission limits contained in WTI's permit. (Appellee WTI's Exhibit 12; HT Vol. II, pp. 103 - 106.)

79. As Mr. Sigg summarized in his testimony, " . . . the emission tests that were conducted at WTI confirmed that the overall system is performing as we

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[14] Although the dioxin emission level exceeded 30 nanograms in one of the five test runs conducted in August of 1993, the average emission of dioxin was 13 nanograms per cubic meter. Mr. Sigg testified that he felt the larger dioxin emission in this one test was due to contamination in the lab, not actual dioxin emissions in excess of 30 nanograms. Regardless, since the Director's Findings and Orders imposed a dioxin emission limit of an <u>average</u> of 30 nanograms, the test results complied with this standard.

intended it to perform." Or, as stated by Mr. Anderson after reviewing test results relative to stack emissions, "I would say that these results are indicative, that the estimates provided in the process flow diagrams by WTI for the permit change are accurate and are borne out by actual field data." (HT Vol. V, pp. 21, 111)

80. Finally, after discussing the various limitations contained in WTI's current permit verses the limitations contained in the permit originally approved by the HWFB in 1984, Mr. Anderson summarized by concluding, ". . . I would say the current operating conditions are more restrictive than the '84 permit." (HT Vol. IV, p. 125.)

TESTIMONY OF APPELLANTS' EXPERT WITNESS - DR. MICHAEL MCCAWLEY

81. Over objections by both Appellees, the Board accepted Appellants' witness, Dr. Michael McCawley,[15] as an expert in the areas of air pollution control technology and the environmental and health effects of air pollution. (HT Vol. IV, pp. 227-257)

82. In January of 1991, prior to his testimony before the Board, Dr. McCawley had presented a written statement to the Ohio EPA in which he set forth his opinion regarding the addition of the spray dryer at the WTI facility, as well as his view concerning the potential air pollution impact of the incinerator. (Appellee WTI's Exhibit 22)

83. In his hearing testimony and in his earlier written statement, Dr. McCawley asserted that the addition of a spray dryer at the WTI facility would

[15] Dr. McCawley possesses a Master's degree in air pollution engineering from West Virginia University and a Doctorate degree in environmental health from the Department of Environmental Medicine at New York University.

create a "feedback loop" between the scrubber and the spray dryer whereby some pollutants would be re-entrained and recycled through the scrubber and back to the spray dryer. He further stated that the result of this feedback loop would be a continually increasing concentration of particulate in the flue gas and, ultimately, increased contaminants emitted from the stack, producing an increased risk to the environment. (HT Vol. IV, p. 258, p. 262, p. 275)

84. More specifically, Dr. McCawley stated that because of the addition of the spray dryer, mercury would be recycled through the system, build up and eventually, ". . . increase the amount of mercury that comes out of the stack." Dr. McCawley summarized that this increase in mercury emissions from the stack of WTI's facility would lead to an increased risk of harm to the environment or to public health and safety. (HT Vol. IV, p. 262, p. 273)

85. Mr. Sigg countered Dr. McCawley's assertion regarding mercury buildup in the system by pointing out that activated carbon is added to the scrubber water in the neutralization system to adsorb the mercury. The scrubber water, with the carbon particles adsorbed to it, is injected into the spray dryer. In the spray dryer the water is evaporated, leaving the dry carbon particles which are suspended in the flue gas. The carbon particles containing the mercury are either dropped out in the spray dryer or entrained in the flue gas and subsequently removed from the system by the electrostatic precipitator. (HT Vol. V, pp. 11 - 13; 26 - 28)

86. Dr. McCawley also testified that the addition of the spray dryer could potentially increase emissions of dioxins from the WTI facility. (HT Vol. IV, p. 274, pp. 298 - 299)

87. In his testimony, Mr. Sigg refuted Dr. McCawley's assertion regarding

the potential for increased dioxin emissions by pointing out that dioxins recirculated to the spray dryer would adsorb onto the carbon added to the neutralization system, as well as the carbon injected into the flue gas by the enhanced carbon injection system. The dioxin is then removed from the system when the carbon particles, with the dioxin adsorbed, are removed by the electrostatic precipitator. (HT Vol. V, pp. 13 -15)

88. Mr. Sigg further explained that the system with the spray dryer was less conducive to the formation of dioxins than the system without the spray dryer since an extended residence time at the critical temperature for the formation of dioxins is avoided due to the changes made as a result of the addition of the spray dryer. (HT Vol. V., pp. 13 -15; also see Finding of Fact # 40)

89. In his testimony, Dr. McCawley also opined that removing the liquid from the scrubber liquor, as is done with the addition of the spray dryer, "increase[s] the potential for toxicity" since the water which is being removed is the "nontoxic component." (HT Vol. IV, p. 282)

90. Mr. Anderson's testimony challenged this assertion by Dr. McCawley. Specifically, Mr. Anderson stated:

> . . . The dry material that accumulated from the current design that is trucked off-site chemically will have the same constituents in it as the liquid blow down from the tanks in the 1984 design statements that (sic.) there will be no water and there will be a small amount of activated carbon added to it.

Mr. Anderson also offered the following regarding this matter:

> . . . It is very difficult to say which is more toxic. It depends on how it is delivered to a target organism, basically. (HT Vol. IV, p. 70)

91. Dr. McCawley also asserted that, "eventually the level of pollution going out the stack will build up to the concentration equivalent to what the

concentration would be without the scrubber." During his testimony Dr. McCawley presented and discussed a mathematical formula he had prepared which he stated supported this theory. (Appellee WTI's Exhibit 22; HT Vol. IV, pp. 290 - 295)

92. To counter Dr. McCawley's feedback loop theory, the Appellees presented the testimony of Mr. Sigg and Mr. James Thomas Tucker,[16] the supervisor of the Environmental Assessment Unit of the Division of Air Pollution Control at the OEPA.[17] First, Mr. Sigg indicated that Dr. McCawley had mischaracterized the process used at the WTI facility as a cycle, when in reality the system represents a continuous process which reaches a steady state i.e., "a condition in which the process has achieved a stable mode of operation that would be characterized by concentrations [and, consequently, emission rates] not changing any further." (HT Vol. V, pp. 5 - 9)

93. Mr. Tucker supported Mr. Sigg's testimony through independent calculations which he performed using Dr. McCawley's mathematical formula and substituting actual removal efficiencies and re-entrainment efficiencies. Mr. Tucker's calculations indicated that there were not continually increasing emissions levels, but rather, that the incineration system reached a steady state, with no increased emissions levels, by the second cycle (or "iteration") of the system. As specifically explained by Mr. Tucker, ". . . while there was an increase in emissions due to the recirculation of the scrubber liquor through the spray dryer, which was indicated by McCawley's second case cycle 2 equation

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[16] Mr. Tucker possesses a Bachelor's degree in physics. (HT Vol. V, pp. 37-38)

[17] In his position at the OEPA, Mr. Tucker oversees the unit that performs and reviews dispersion modeling and performs other types of environmental assessments for determining compliance status or attainment status for the national ambient air quality standards. (HT. Vol. V, pp. 38-39)

and the subsequent equations, there was . . . no increase out to six decimal places . . of the particulate out of the stack in any subsequent cycle . . . " Mr. Tucker further summarized, "There definitely is a change in emissions when the . . . liquor from the scrubber is introduced into the spray dryer. There does not appear to be the feedback, the continuously increasing concentrations due to this feedback loop that Dr. McCawley claimed that there was." (HT Vol. V, pp. 40 - 44; 66 - 67; 70 - 71; 86 - 87; 92; Appellee Director's Exhibit 11)

94. Mr. Tucker also pointed out in his testimony that the emissions levels as calculated under this equation are still all "considerably below the limit of ten pounds per hour" for particulate matter contained in WTI's HWFB permit. (HT Vol. V, p. 47)

95. Mr. Tucker further testified that he found three discrepancies in Dr. McCawley's mathematical formula: 1) McCawley's failure to include the removal efficiency of the scrubber; 2) McCawley's failure to include the removal efficiency of the spray dryer; and 3) McCawley's failure to include the dissolved chlorides generated in the spray dryer by evaporation of the scrubber liquor. All three of these discrepancies would have an impact on the calculation to determine particulate emissions.[18] (HT Vol. V, pp. 62 - 63)

96. Next, Mr. Tucker explained that he had written an equation using Dr.

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[18] On cross-examination, Dr. McCawley admitted that in rendering his opinion regarding the increased particulate out of the stack which would result from the addition of the spray dryer to the incineration system he did not look at any actual emission data from either the WTI facility or similar facilities, he did not know or consider the removal efficiency of the ESP, he did not know or consider the removal efficiency of the scrubber, he did not know or consider the reentrainment efficiency of the spray dryer and he did not know or consider the removal efficiency of the activated carbon. Dr. McCawley stated that he based his review upon, "A very brief description of the spray dryer, original permit documentation, and the WTI brochure showing the location of the spray dryer and the ESP." (HT. Vol. IV, pp. 293-297)

McCawley's description of his understanding of the system but substituted the appropriate numbers from information obtained from WTI to create a "mass balance analysis" of the spray dryer system, i.e., the sum of all the material going into the system equals the sum of all the material leaving the system through waste and the stack. Through this calculation Mr. Tucker, once again, concluded that there was no feedback loop causing continually increasing emissions levels as represented by Dr. McCawley; and further, that the emissions levels were considerably less than the allowable particulate limits set by HWFB. (HT Vol. V, pp. 48 - 56; Appellee Director's Exhibit 12)

97. Mr. Tucker also testified regarding an equation he had written in which he modified his mass balance analysis, discussed above, by correcting all of the discrepancies he had noted in Dr. McCawley's equation, including Dr. McCawley's failure to consider the impact of the recirculation of dissolved chlorides in the system. Once again, Mr. Tucker's analysis indicated that there was no feedback loop causing continually increasing emissions levels (in this instance emissions increased after the first three iterations, but the system reached steady state on the fourth iteration) and the emissions levels which were observed remained "substantially below" the allowable particulate limits set by HWFB. (HT Vol. V, pp. 59 - 64; Appellee Director's Exhibit 13)

## CONCLUSIONS OF LAW

1. In reviewing and deciding an appeal, the Board must determine whether the action of the Director which is under appeal was unreasonable or unlawful.

2. "Unreasonable" means that the action is not in accordance with reason or that it has no factual foundation. "Unlawful" means that the action taken by

the Director is not in accordance with law. Only where the Board can find from the certified record filed in the case and the evidence presented at hearing that there is no valid factual foundation for the Director's action or that the action was not in accordance with law, can the action under appeal be found to be unreasonable or unlawful. The Board may not substitute its judgment for that of the Director. (Citizens Committee to Preserve Lake Logan v. Williams, 56 Ohio App. 2d 61 [1977].)

3. The burden of proceeding was appropriately placed upon Appellants in this matter, while the burden of proof remained with Appellee WTI, the permit applicant. (See OAC Section 3746-5-30; CF/Water v. Schregardus, EBR Case No. 112570 [September 23, 1993].)

4. Revised Code Section 3734.05(I)(2) provides in pertinent part as follows:

> . . . a hazardous waste facility installation and operation permit may be modified or revised at the request of the director or upon the written request of the permittee only if any of the following applies:
> (A) The permittee desires to accomplish alterations, additions, or deletions to the permitted facility or to undertake alterations, additions, deletions, or activities that are inconsistent with or not authorized by the existing permit; . . .

(Also see OAC Section 3745-50-51 which contains a nearly identical provision.)

5. In determining whether a permit change request submitted pursuant to R.C. 3734.05 and OAC 3745-50-51 constitutes a revision or a modification, the Director must adhere to the guidelines set forth in R.C. 3734.05(I)(1) and OAC 3745-50-51(C)(1).

6. Ohio Revised Code Section 3734.05(I)(1) states:

> As used in this section, 'modification' means a change or alteration to a hazardous waste facility or its operations that impacts on the siting criteria contained

> in division (D)(6) of this section. 'Revision' means any change or alteration to a hazardous waste facility or its operations that is not a modification.

7. Ohio Revised Code Section 3734.05(D)(6) lists the siting criteria which must be met in order for a facility to receive a hazardous waste facility installation and operation permit and which, pursuant to ORC 3734.05(I)(1), must be impacted for a permit change request to be classified as a modification. Specifically, Ohio Revised Code Section 3734.05(D)(6) provides in pertinent part as follows:

> The Board shall not approve an application for a hazardous waste facility installation and operation permit unless it finds and determines as follows:
> (a) The nature and volume of the waste to be treated, stored, or disposed of at the facility;
> (b) That the facility complies with the director's hazardous waste standards adopted pursuant to section 3734.12 of the Revised Code;
> (c) That the facility represents the minimum adverse environmental impact, considering the state of available technology and the nature and economics of various alternatives, and other pertinent considerations;
> (d) That the facility represents the minimum risk of all of the following:
>
> (i) Contamination of ground and surface waters;
> (ii) Fires or explosions from treatment, storage, or disposal methods;
> (iii) Accident during transportation of hazardous waste to or from the facility;
> (iv) Impact on the public health and safety;
> (v) Air pollution;
> (vi) Soil contamination.
>
> (d) That the facility will comply with Chapters 3704., 3734., and 6111. of the Revised Code and all rules and standards adopted under those chapters;
> (f) That if the owner of the facility, the operator of the facility, or any other person in a position with the facility from which he may influence the installation and operation of the facility has been involved in any prior activity involving transportation, treatment, storage, or disposal of hazardous waste, that person has a history of compliance . . .

> (e) That the active areas within a new hazardous waste facility . . . are not located or operated within any of the following:
>
> (i) Two thousand feet of any residence, school, hospital, jail, or prison;
>
> (ii) Any naturally occurring wetland;
>
> (iii) Any flood hazard area . . .
>
> (h) That the facility will not be located within the boundaries of a state park, . . . or any property that lies within the boundaries of a national park or recreation area . . .

8. In Northern Ohioans Protecting the Environment v. Shank (1988), 52 Ohio App. 3d 41, the Franklin County Court of Appeals extensively discussed the concept of the term "impact" in R.C. 3734.05(H) [now 3734.05(I)] and concluded thusly:

> . . . the term 'impact,' as it is used in R.C. 3734.05(H), connotes 'adverse impact' and not merely any impact. In other words, a change is not a modification unless it presents an increased risk of adverse environmental effect. It is only when the change has such an effect that advance approval by the Board is required.

9. The testimony of Mr. Lim and Mr. Anderson substantiates that they carefully and thoroughly considered the possible impact WTI's addition of the spray dryer would have upon the siting criteria contained in R.C. 3734.05(D)(6) prior to making their recommendation to the Director that he classify Appellee's permit change request as a revision.

10. Furthermore, the Board finds that the testimony and evidence offered in the instant matter indicate that the Director acted both reasonably and lawfully in determining that the addition of the spray dryer to the incineration system at the WTI facility would not have an adverse impact upon any of the siting criteria contained in R.C. 3734.05(D)(6) and, thus, it was appropriate for him

to classify Appellee's permit change request as a revision rather than a modification.

11. Ohio Administrative Code Section 3745-50-51(C) expands on the provisions of R.C. 3734.05(I) by listing examples of changes or alterations to a hazardous waste facility which would constitute a modification. Specifically, OAC 3745-50-51(C) provides as follows:

> (C) A written request for a modification or revision from the permittee shall be submitted to the director and shall contain such information as is necessary to support the request.
> (1) A 'modification' is a change or alteration to the hazardous waste facility or its operations that impacts on the siting criteria contained in division (D)(6) of section 3734.05 of the Revised Code, including, but not limited to, the following:
> (a) A storage facility requesting authority to conduct treatment or disposal activities; or
> (b) A treatment facility requesting authority to conduct disposal activities; or
> (c) A treatment or disposal facility requesting authority to conduct treatment or disposal methods which are different from those previously authorized and which may present a potential increased risk of hazard to the public health or environment; or
> (d) A treatment, storage, or disposal facility requesting authority to handle additional waste types when such wastes may present a potential increased risk of hazard to the public health or environment when compared to wastes previously approved for treatment, storage, or disposal at the facility; or
> (e) A treatment, storage, or disposal facility requesting additional operational capacity when such additional capacity may present a potential increased risk of hazard to the public health or the environment when compared to the

> operational capacity previously approved for treatment, storage, or disposal at the facility; or
> (f) A transfer of the permit from the permittee to another person; or
> (g) Other changes or alterations which may present a potential increased risk of hazard to the public health or the environment as determined by the director.

12. The testimony of Mr. Lim and Mr. Anderson substantiates that they carefully and thoroughly considered the examples of changes or alterations listed in OAC 3745-50-51(c) which constitute a modification prior to making their recommendation to the Director that he classify Appellee's permit change request as a revision.

13. Furthermore, the Board finds that the testimony and evidence offered in the instant matter indicate that the Director acted both reasonably and lawfully in determining that the addition of the spray dryer to the incineration system at the WTI facility did not fall within any of the examples of a 'modification' set out in OAC 3745-50-51 and, thus, it was appropriate for him to classify Appellee's permit change request as a revision.

14. It is well settled that in determining the reasonableness of the Director's decision in a de novo hearing the Board need not limit itself to the evidence that was before the OEPA at the time of the Director's decision. (See e.g., Buehler v. McAvoy (Aug. 18, 1981), Franklin App. No. 81AP-211, unreported (1981 Opinions 2517, 2523) and Northeast Ohio Regional Sewer District, et al., v. Shank (July 6, 1989), Franklin App. No. 88AP - 1058.) In light of this premise, we find that the results of the trial burns and other tests conducted at the WTI facility after the Director's decision to classify Appellee's permit change request as a revision rather than a modification, are both relevant and

persuasive documentation supporting the validity of the Director's decision. Indeed, the emissions tests which have been conducted at WTI since the addition of the spray dryer to the incineration system have consistently revealed emissions which are substantially below the emission limits contained in WTI's permit.

15. We also find it significant that in several instances (most notably, the imposition of a mercury feed limit and a dioxin emission limit) the current operating conditions at the WTI facility are more restrictive than the operating conditions contained in the original permit issued by the HWFB.

16. Furthermore, we are unpersuaded by Appellant's contention that the addition of the spray dryer to WTI's incineration system increases the risk of air pollution and impacts adversely on the public health and safety based on the fact that the system may malfunction and the flue gas may not be properly cooled. The Board has not been presented with any evidence indicating that the equipment at issue will fail; indeed, Mr. Sigg presented compelling testimony regarding the unlikelihood of a malfunction of the spray dryer and the safeguards which are in place in the event a malfunction or operation interruption should occur. Thus, in the absence of some tangible evidence that such a malfunction is possible or probable, the Board is unwilling to find that the Director acted unreasonably or unlawfully in refusing to classify Appellee's permit change request as a modification based on the highly speculative facts set forth by Appellants. (Indeed, in CECOS International, Inc. v. Shank, 79 Ohio App. 3d 1 (1992), the Franklin County Court of Appeals indicated that the Director is not permitted to impose conditions upon a permittee based upon his speculation that the permittee might violate the conditions contained in the permit. Similarly, we feel it

would have been inappropriate for the Director to base his classification of Appellee's permit change request upon abject speculation concerning a possible mechanical failure of the incinerator when there was no evidence presented to assume such a failure would occur.)

17. Finally, in light of our finding that the Director acted reasonably and lawfully in classifying Appellee's permit change request as a revision rather than a modification, there was no reason for the Director to require WTI to recalculate its air emissions model.

18. For the foregoing reasons, we find the determination of the Director to classify WTI's permit change request as a revision, rather than a modification, was both reasonable and lawful and should be affirmed.

FINAL ORDER

The action of the Director classifying the instant permit change request as a revision was both reasonable and lawful and is hereby AFFIRMED.

The Board, in accordance with Section 3745.06 of the Revised Code and Ohio Administrative Code 3746-13-01, informs the parties that:

> Any party adversely affected by an order of the Environmental Board of Review may appeal to the Court of Appeals of Franklin County, or, if the appeal arises from an alleged violation of a law or regulation to the court of appeals of the district in which the violation was alleged to have occurred. Any party desiring to so appeal shall file with the Board a Notice of Appeal designating the order appealed from. A copy of such notice shall also be filed by the Appellant with the court, and a copy shall be sent by certified mail to the Director of Environmental Protection. Such notices shall be filed and mailed within thirty days after the date upon which Appellant received notice from the Board

by certified mail of the making of an order appealed from. No appeal bond shall be required to make an appeal effective.

THE ENVIRONMENTAL BOARD OF REVIEW

Toni E. Mulrane, Chairman

Entered in the Journal of the Board this 30th day of May, 1996.

Jerry Hammond, Member

COPIES SENT TO:

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FINDINGS OF FACT
AND FINAL ORDER
Case No. EBR 892327, ETC.

## CERTIFICATION

I hereby certify that the foregoing is a true and accurate copy of the FINDINGS OF FACT, CONCLUSIONS OF LAW AND FINAL ORDER MARY LEE VANDEVANDER, ET AL. V. DONALD SCHREGARDUS, DIRECTOR OF ENVIRONMENTAL PROTECTION, ET AL., Case No. EBR 892327-892329 and 892334 entered into the Journal of the Board this 30th day of May, 1996.

Mary J. Oxley

Mary J. Oxley, Executive Secretary

Dated this 30th day of
May, 1996, at Columbus, Ohio.