

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

Nov 20, 2000

Honorable James M. Seif, Secretary
Pennsylvania Department of Environmental Protection
Rachel Carson State Office Building, 16th Floor
P.O. Box 2063
Harrisburg, PA 17105-2063

Dear Secretary Seif:

The purpose of this letter is to inform you that the United States Environmental Protection Agency (EPA) has determined that the City of Harrisburg's (the City's) latest proposal to derate the Harrisburg Materials Energy, Recycling and Recovery Facility (HMERRF), as described in Evergreen Environmental, Inc.'s September 13, 2000 letter to the Pennsylvania Department of Environmental Protection (PADEP), is not approvable. EPA received the proposal on October 2, 2000 under a cover letter from John F. Slade of your office. On October 24, 2000, staff and managers from both of our respective agencies met with City of Harrisburg representatives. The purpose of that meeting was to gather additional information from City representatives so we could make a more informed decision regarding the derate proposal.

Considering that the final statutory compliance date for the HMERRF is December 19, 2000, it has been our goal to provide your office with a prompt and complete response to the City's derate proposal. This disapproval determination was made after a careful review of the proposal by this office, the Office of Air Quality Planning and Standards, the Office of Enforcement and Compliance Assurance, and the Office of General Counsel. Our reasons for this disapproval determination are explained in detail below.

In addition to this derate proposal determination, we believe it is important to express our concerns regarding the HMERRF's environmental impacts, and its tenuous 111(d)/129 Plan compliance status. These concerns are also provided below.

HMERRF Derate Proposal-EPA Evaluation

As you know, in our March 16, 2000 letter to the PADEP, we disapproved the City's initial derate request and outlined the minimum requirements that must be met before EPA would consider a derate proposal as approvable. In summary, a derate proposal must be based upon a permanent physical change of the municipal waste combustor (MWC) unit capacity. A self-imposed operating restriction, such as limiting the MWC boiler steam flow rate through the use of a facility computerized process control system, is not considered a permanent physical change. A somewhat similar proposal was made in the past by the Bay County, Florida MWC owners/operators; however, that proposal was disapproved by the Florida Department of Environmental Protection and EPA Region IV. A subsequent Bay County proposal met the general derate requirements, as outlined in our March 2000 letter to the PADEP and previous EPA guidance, by including a physical modification to its MWC unit combustion air fans. That approximately five (5) months from the time of initial design to construction completion, not including the time for derate verification testing.

In order to derate a combustor unit below the MWC 111(d)/129 plan applicability threshold, the derate must be a permanent physical change. Derating a MWC unit below the EPA emissions guidelines' (EG) applicability threshold (a charge rate greater than 250 tons/day of municipal solid waste) was not considered a compliance option during the development of the EG. However, as a matter of policy the derate option is reflected in various new source performance standards (NSPS) applicability determinations for boilers, and was provided for consideration as a compliance option in the Federal MWC 111(d)/129 plan promulgated by EPA on November 12, 1998 (63FR63191). Currently, only one large MWC facility, as noted above, has received EPA approval for a derate. The Bay County, Florida MWC units were derated from 255 tons per day (tpd) to 245 tpd. This is a four (4) percent reduction in MWC unit capacity achieved through a physical modification of the impeller blades of the forced draft fans used for combustion air supply. As a result, the waste combustion capacity, and thus steam production rates, are now limited for each MWC unit. It is important to note that steam production rates are limited because of the physical change the facility and not a self-imposed operating restriction or change.

In contrast, the Harrisburg derate proposal is a self-imposed operating restriction that limits MWC unit charge and boiler steam flow rates by electronically modifying the HMERRF's process control system. As proposed, this would be accomplished by installing new programmable logic control (PLC) hardware and software packages with several levels of security. Modifications of the municipal waste combustor's PLC system is not considered a physical change, because such a change does not physically alter the combustion capacity of the MWC units. As stated in EPA's initial letter denying the City's derate request, ". . . applicability is based upon unit capacity, not self-imposed operating restrictions." [Emphasis added.] Also, EPA's March 16, 2000 letter, clearly states that a derate must be accomplished through a permanent physical change. At a minimum, the following must be established in order to support a claim of permanent physical change:

1. The physical change cannot be easily undone;
2. There is the need for a full MWC plant closure and/or MWC unit closure to make the physical change, or to reverse it;
3. There is a reduction of the full load maximum continuous rating of the MWC unit, and not just a reduction in the operating level (feed rate); and
4. There must be verification of the proposed derate through vendor submitted design, and construction documents; any other information EPA may require to verify to derate.

Evergreen Environmental, Inc.'s September 13, 2000 letter fails to show that the combustion capacity for the units will be reduced and that the revised derate proposal meets the requirements of items 1 and 3 above. Accordingly, the City's latest derate proposal is not approvable. Evergreen Environmental, Inc.'s responses to the derate requirements and EPA's comments are provided below:

Evergreen Environmental, Inc.'s Response to Item 1 - "It cannot be easily undone. It would require an estimated 24 hours to reverse and would be outside the capabilities of any person directly associated with the HMERRF, requiring the assistance of an outside contractor." *EPA Comment* - The Evergreen Environmental, Inc. letter does not describe the "It" as a physical change to the combustion capacity of the MWC unit, which is necessary for EPA consideration of a proposed claim of permanent physical change. Rather, the letter states, "It is based on limiting the maximum capacity of the combustors based on limiting steam production." [Emphasis added.] Limiting steam production through the use of PLC system, even with several layers of security, is considered a self-imposed operating restriction, not a permanent physical change. This alone is cause for disapproval of the

derate proposal.

Furthermore, we question the permanency of a proposed change that could be reversed in an estimated 24 hours, even if the proposed PLC software package is only accessible and capable of being modified by the PLC contractor. Although a short shutdown of the MWC units may be required to allow modification of the PLC software program(s) to increase the maximum steam production rate (corresponding to a waste charge or feed rate that exceeds the 250 ton per day 111(d)/129 applicability threshold), the reversal of the derate process can be accomplished rather easily by modifying only the PLC software package. This would not involve any physical change of a MWC unit component that determines or limits combustion capacity. Our determination is based upon statements made by both Evergreen Environmental, Inc., and Applied Control Engineering, the proposed PLC vendor, in the derate proposal. Even if this were not an EPA concern, based upon our review of the submitted derate proposal and conversations with City representatives, the City intends to operate the facility with derated MWC units only as long as it takes to complete construction on each of the two upgraded 360 tpd MWC units. Therefore, the City's derate request does not represent a legitimate proposal to derate the HMERRF permanently. This is a second cause for disapproval of the derate proposal.

Evergreen Environmental, Inc.'s Response to Item 3 - "There will be a reduction in the maximum continuous rating of the MWC unit, based on steam generation and not feed rate. . . . In anticipation that EPA may argue that point number 3 is not adequately addressed, I would emphasize that this point of policy, established in response to questions of boiler de-ratings, is in direct conflict with the MWC regulations at 40 CFR 60.58b(j)(ii). These regulations specifically establish maximum capacity as the maximum design charging-rate for those MWC's designed on this basis."

EPA Comment - Evergreen Environmental, Inc. states that the maximum continuous rating of the MWC unit is ". . . based on steam generation and not feed rate." This statement conflicts with a statement made by Applied Control Engineering in section 4.1 (second paragraph, first sentence). EPA considers both steam generation and feed rates as operational parameters. The operating limits of these two parameters are determined by the physical constraints reflected in the MWC unit design capacity. EPA's requirement is that there be a reduction of the full load maximum continuous rating (MCR) of the MWC unit, and not just a reduction of the operating level (e.g., feed rate and steam generation rate). The City's proposal does not meet this requirement. This is a third cause for disapproval of the derate proposal.

Evergreen Environmental, Inc.'s reference to 40 CFR 60.58(j)(ii) appears to be a typographical error; the correct reference for determining maximum charging rate is 40 CFR 60.58(j)(1)(ii). More importantly, 40 CFR 60.58(j)(1)(ii) states that the maximum charging rate shall be the maximum design charge rate. [Emphasis added.] The design charge rate for each HMERRF combustor is 400 tpd. It was EPA's intent that permit limits, operating schedules, or physical limits of parts of the MWC other than the affected facility (which is the combustor) would not be considered in defining the size category (i.e., small or large).

Evergreen Environmental, Inc. cites the bay County, Florida, MWC derate approval by EPA, and then argues that EPA appears to be advocating a reduction in combustion air which could cause combustion problems in the Harrisburg units. By definition, full load MCR is that level of boiler steam production that is normally expected for extended periods of operating time. Accordingly, no operational problems would be expected while the unit is operating at full load MCR. EPA is not advocating any particular derate approach or measures. As we stated in our March 26, 2000 letter to PADEP, "EPA will not identify a list of specific measures or type of measures. Such measures must be evaluated on a case-by-case basis."

We recognize that a permanent physical change at one MWC facility may not be appropriate at another facility. The appropriateness of such a change depends, for example, upon the type of combustor design, the magnitude of the proposed derate, and the time available to make the proposed design modification. Therefore, the Bay County MWC derate proposal was not suggested in our initial denial letter as a possible solution or option for Harrisburg. Such recommendations must come from the City's consulting engineers, or other appropriate City representatives, and not from EPA. Furthermore, we recognize that while the derated capacity of each of the Bay County MWC units is four (4) percent less than its original unit design capacity, an approvable derate for each of the Harrisburg MWC units would be an approximately thirty-nine (39) percent reduction from its design capacity. This is based upon the fact that the Harrisburg MWC design capacity is 400 tpd for each unit, and not the permitted capacity of 360 tpd. In a letter dated April 19, 1991, Ogden Martin system, Inc. states that each of the two Martin combustion systems (stoker/boiler) installed at the Harrisburg facility are designed to process "400 tons per day of municipal solid waste." The letter is part of the City's 1991 Application for a Plan approval to construct a modernized MWC plant to meet the EPA emission guidelines for existing combustors under 40 CFR part 60, subpart Ca.

It is important for the City to recognize that, at this point in time, it is highly unlikely that it will be able to submit and receive EPA approval of a viable derate proposal that could be initiated and completed before the statutory December 19, 2000 compliance date.

EPA Environmental Concerns/Issues

In addition to the deficiencies we have noted with regard to the City's derate proposal, EPA has serious environmental concerns about the continued operation of the existing HMERRF. Based upon our review of the City's October 1999 stack test report for dioxins/furans emissions, the HMERRF average dioxins/furans emissions rates for both units is approximately 1,170 ng/dscm. This is 39 times higher than the EG requirement of 30 ng/dscm for a facility utilizing a fabric filter for particulate matter control, and 20 times higher than the EG requirement of 60 ng/dscm for a facility utilizing an electrostatic precipitator (ESP) for particulate matter control. The level of dioxins/furans emissions control required under the EG for large MWCs is the same level proposed in the August 30, 1999 EG for Class A small MWC units with an aggregate plant capacity greater than 250 tpd. (See 64 FR 47234.) In other words, if EPA were to approve the proposed Harrisburg MWC unit derate, it is likely that the derated facility would continue to emit dioxins/furans at a rate substantially above the applicable EG requirement for Class A small MWC units. Furthermore, approval of the Harrisburg derate may allow the HMERRF to legally operate as a small MWC plant until the fall of 2005, or later, depending upon the date EPA promulgates the EG requirements for small MWC's.

Even at a lower steam production rate (corresponding to a MWC charge rate just below 250 tpd), the continued operation of the Harrisburg MWC beyond December 19, 2000 would result in high levels of MWC emissions as compared to the EG requirements. These emissions include acid gasses (sulfur dioxide, hydrogen chloride, and nitrogen oxides), heavy metals (lead, cadmium, and mercury), and organics (dioxins/furans). As you know, the Harrisburg incinerator was recently identified in an Associated Press news release as one of the largest North American sources of dioxins/furans emissions that adversely impact Broughton Island, just north of the Arctic Circle on Baffin Bay. Although one may challenge the validity of the study that concludes the HMERRF is a significant source of dioxins/furans on Broughton Island, there is no doubt that the HMERRF is one of, and perhaps, the most significant single source of dioxins/furans emissions in the United States. Human epidemiological studies have shown a positive association between dioxin exposure and cancer. The International Agency of Cancer Research (IARC) has classified 2,3,7,8-TCDD, the most toxic form of dioxins, as a known human carcinogen.

MWC 111(d)/129 Plan Compliance Concerns

In 1992, it appeared that the City was well on its way in an effort to modernize the HMERRF. This statement is based upon the following information:

1. The 1991 City submittal of a Plan Approval Application to the PADEP that included detailed preliminary design specifications, and drawings for the installation of pollution control equipment for acid gases, metals, and dioxins/furans,
2. The June 1991 public advertisement for HMERRF modernization project proposals, and
3. The June 1992 PADEP plan approval for two upgraded MWC units at the HMERRF, each controlled by a combination of acid gas scrubbers, selective noncatalytic reduction system, and fabric filters.

Even after considering possible HMERRF modernization delays caused by the 1990 Clean Air Act amendments, the 1994 Supreme Court Carbone decision, EPA's December 19, 1995 promulgation of maximum achievable control technology-based EG requirements (Subpart Cb) for existing large MWC units, and the 1997 U.S. Court of Appeals Davis County decision, the City of Harrisburg should still not be in its current tenuous position with respect to meeting the statutory December 19, 2000 compliance date through the submittal of an "eleventh hour" derate proposal. Based upon information we have received from a variety of sources, it appears that there are only two large MWC facilities, out of a total of sixty-five nationwide, that have not initiated and/or completed construction of an acid gas control system, as required under the EG and 111(d)/129 plans. Installation of an acid gas control system is an important part of an effective reduction and control plan for dioxins/furans emissions from a MWC unit.

As you know, after the HMERRF was identified in 1997 as a significant source of dioxins/furans emissions, EPA worked closely with the City in an attempt to mitigate, as expeditiously as possible, the high levels of dioxins/furans through an appropriate EPA enforcement mechanism. At the same time, we tried to mitigate potential adverse financial impacts that allegedly would have been caused by a resource Conservation and Recovery Act enforcement action against the City. As a result of our cooperative efforts with the City, EPA issued the May 1997 Agreement by Consent Order (AOC) under the Clean Air Act. The AOC required the City to immediately implement timely emission reduction measures for dioxins/furans. Our discussions with City representatives, leading up to the issuance of the AOC, should have been considered a "wake-up call" for the City with respect to the urgency of its need to take expeditious steps towards the upgrade of its HMERRF by December 19, 2000.

Considering the 1992 HMERRF modernization plan approval (i.e., construction permit) issued by the PADEP, the other relevant events noted above, and EPA's approval of Pennsylvania's 111(d)/129 MWC plan in August 1999 (64 FR 45880), again, it is not clear why the City is now in such a tenuous position with respect to meeting the December 19, 2000 statutory compliance date. Economic infeasibility, because competing waste disposal facilities offer a lower tipping fee to customers, is not just cause for the City's failure to meet the air pollution control retrofit requirements of the Pennsylvania large MWC 111(d)/129 plan.

Considering our disapproval of the submitted derate proposal and the impossibility of a timely retrofit of the required air pollution control equipment by the City, the two MWC units at the HMERRF must cease operation on or before December 19, 2000. This is required under the approved Pennsylvania large MWC 111(d)/129 plan, and is stipulated in Mayor Stephen R. Reeds' December 7, 1998 Cease

Operation Notice to the PADEP.

If you believe a meeting would be useful to discuss the City's plan for timely compliance, please contact either Cynthia Yu-Robinson, Pennsylvania Liaison Officer at (215) 814-5557, or Judith M. Katz, Director, Air Protection Division at (215) 814-2654.

Sincerely,

Bradley M. Campbell
Regional Administrator

cc:

Mayor Stephen R. Reed, City of Harrisburg
James Salvaggio, PADEP
Leif Ericson, PADEP
John Slade, PADEP