



# U.S. Environmental Protection Agency Applicability Determination Index

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Control Number: Z060003

Category: NESHAP  
 EPA Office: Region 6  
 Date: 04/12/2001  
 Title: Benzene Emissions from Exchange Leaks  
 Recipient: David Savage  
 Author: John R. Hepola  
 Comments: Also see this determination under ADI Control No. M060035.

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Part 61, FF	Benzene Waste Operations
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References:	61.340(c)(1)
	63.104
	61.341

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## Abstract:

**Q:** Does EPA find that benzene emissions that occur from heat exchanger leaks at a facility, located in Texas and represented by Baker Botts, are to be included in the calculation of the Total Annual Benzene (TAB) quantity from facility waste water under the NESHAP for Benzene Waste Operations, 40 CFR part 61, subpart FF?

**A:** Yes. EPA finds that neither benzene emissions occurring from non-contact heat exchanger leaks into cooling tower water nor benzene quantities from "contact heat exchangers" qualify for the exemption or exclusion from the required benzene calculation (TAB) under the NESHAP for Benzene Waste Operations, 40 CFR part 61, subpart FF. Therefore, waste in the form of gases or vapors that is emitted from process fluids is required to be part of the calculation of the total annual benzene quantity in facility waste generation. This determination is based on the fact that the benzene emissions are directly generated by the respective process, and are neither the result of leakage nor of process offgas.

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## Letter:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
 REGION 6  
 1445 ROSS AVENUE, SUITE 1200  
 DALLAS, TX 75202-2733

APR 12 2001

Mr. David Savage  
 BAKER BOTTS L.L.P.  
 1600 San Jacinto Center  
 98 San Jacinto Blvd.  
 Austin, Texas 78701-4039

Re: Request for Regulatory Interpretation of 40 C.F.R. Part 61, Subpart FF, National Emission

Standards for Benzene Waste Operations (NESHAP)

Dear Mr. Savage:

This is in response to your letter of March 1, 2000, requesting confirmation that benzene (BZ) emissions that occur from heat exchanger leaks should not be included in the calculation of the total annual quantity of BZ (TAB) from facility waste under the NESHAP for BZ Waste Operations, 40 C.F.R. Part 61, Subpart FF (BWN for BZ Waste NESHAP). Your request was primarily supported by your contention that BZ leaks from heat exchangers are covered by the exemption for waste in the form of gases or vapors emitted from process fluid(s) and are not intended to be included in calculating a facility's TAB.<sup>1</sup> The subject 'heat exchanger leaks' of your request are viewed as leakage of process fluid through the tube bundle into the cooling water side of a non-contact heat exchanger and have been addressed only in that context.

"Waste in the form of gases or vapors that is emitted from process fluids" was quoted from 40 C.F.R. sec.61.340(c)(1) as being exempt from the BWN regulation. Your interpretation of this exemption as being applicable to BZ, that volatilizes to the atmosphere from a cooling tower because of a heat exchanger leak, was understood as follows. A leaking tube bundle within a non-contact heat exchanger, associated with a process unit fluid containing BZ, can result in the respective 'leaked' process fluid being carried through the non-contact cooling water system to the cooling tower, where BZ within the entrained process fluid volatilizes and results in being emitted from the process fluid and cooling water to the atmosphere.

Your request contends, therefore, that the loss of BZ from such non-contact heat exchanger leaks should not be included in a facility's TAB. This position was further supported by a citation of a portion of the preamble to the initial BWN<sup>2</sup>, wherein EPA explained that it did not intend to include gaseous emissions from process fluids in the annual TAB quantity calculation because these emissions were considered in separate regulatory decisions that addressed process emissions (rather than emissions from waste operations) from various source categories. In this regard, the Hazardous Organic NESHAP (HON) at 40 C.F.R. Part 63, Subpart F/3, was identified as the type of regulation that addresses process emissions from heat exchanger leaks, as compared to the BWN, which addresses BZ waste operations. The subject heat exchanger leaks were also categorized as being analogous to the type of BZ equipment leaks that are regulated as 'fugitive emissions' by the NESHAP for BZ in 40 C.F.R. Part 61, Subparts J & V; yet, these Subparts (J & V) are not found to apply to such heat exchanger source leaks into cooling (tower) water.

We have completed our review of your request and find that BZ emissions, which occur from non-contact heat exchanger leaks into cooling tower water, results in the generation of a BZ waste water stream that does not qualify for the exemption and exclusion of BZ emissions from the BWN and its required calculation of the total annual BZ quantity in facility waste generation or TAB. In like manner, BZ quantities, which may result in a waste water stream from "contact heat exchangers", also do not qualify for the exemption or exclusion from the required BWN calculation of the TAB, since it is considered to be a waste stream that is directly generated by the respective process and is neither the result of leakage nor process offgas. (In this respect, a contact heat exchanger is described as having a process design for heat transfer to occur by direct contact of the process fluid with the cooling (tower) water. Whereas, heat transfer within a non-contact heat exchanger is designed to occur through some conduction medium, as opposed to direct contact of the process fluid with the cooling (tower) water.)

This review of your request and finding has been coordinated with EPA's Office of Air Quality Planning and Standards, Office of Enforcement and Compliance Assurance, and National Enforcement Investigation Center, as well as EPA Regions 4, 5 and 10, and is based on the following reasoning:

- 1) Based on the definitions for 'Process wastewater', 'Waste' and 'Waste stream' found in the BWN<sup>4</sup>, cooling tower water, which has been contaminated with BZ via a non-contact heat exchanger leak, results in that water meeting the definition of waste (i.e., a process fluid leaked into the cooling water and generated a waste stream from which waste BZ air emissions occur at the cooling tower). This scenario is equivalent to an equipment leak or spill of an organic process fluid into a sewer system, which results in BZ in the waste being emitted to the air from the wastewater treatment system.
- 2) Because the heat exchanger leak generated a waste stream of the cooling water, the applicability exemption of sec. 61.340(c)(1) for "waste in the form of gases or vapors that is emitted from process fluids" is not relevant nor applicable, since cooling water is not a process fluid. (However, this

exemption does not mean that BZ air emissions from process fluids, occurring prior to the generation of the waste, are excluded from the BWN requirements and the TAB.)

3) The exemption of sec. 61.340(c)(1) excludes process emissions, as distinguished from waste emissions. Waste emissions are considered as waste in the form of gases or vapors that are emitted from waste streams. (Only BZ air emissions from process fluid(s), which occur prior to the generation of the waste, therefore, do not have to be considered for regulation by the BWN or TAB calculation under this exemption.)

4) A comparison of the subject heat exchanger leaks to equipment leaks, regulated as 'fugitive emissions' by 40 C.F.R. Part 61, Subparts J and V, is not considered applicable, in light of EPA's position on such air emissions to not be regulated as "fugitive emissions" under Subpart H of the HON, which was addressed in the preamble to the proposed HON/5, as cited in following:

"The lines within a unit process operation containing process fluids are considered to be part of the process unit (e.g., such as a non-contact heat exchanger) and thus, subject to regulatory requirements, while lines and equipment not containing process fluids are not subject to these requirements (i.e., proposed HON's Subpart H for equipment leaks). Utilities and other nonprocess lines, such as heating and cooling systems, are not considered to be part of a process unit. For example, any direct heating and cooling systems, which generally service many processes at a plant and do not combine their materials with those in the processes they service, are also not subject to these (i.e., equipment leak) requirements."

In summary, Region 6's review of your request finds that BZ emissions to the air, that result from non-contact heat exchanger leaks into cooling tower water, as described herein: (i) constitute a "waste in the form of gases or vapors", that is emitted from a cooling water waste stream, and does not qualify, therefore, for the exemption from the requirements of the BWN provided by 40 C.F.R. sec. 61.340(c)(1); (ii) are intended to be regulated by the BWN; and (iii) should be included in calculating a facility's TAB. [In order for such a cooling tower waste water stream to qualify for exemption from BWN control and treatment requirements, it is required to have a flow-weighted annual average BZ concentration less than 10 ppmw (i.e., parts per million by weight), which cannot be attained by any dilution measures following the waste stream's generation.]

Thank you for your inquiry request, which initiated our formal clarification and resolution of this issue. If we can be of additional assistance or if you have other questions about this response, please contact Mr. Martin E. Brittain, P.E., at (214) 665-7296.

Sincerely yours,

John R. Hepola  
Chief  
Air/Toxics & Inspection  
Coordination Branch

/1 40 C.F.R. sec. 61.340(c)(1)

/2 Vol. 55, No. 45, Fed.Reg., 8318-19, March 7, 1990

/3 See 40 C.F.R. sec. 63.104

/4 See 40 C.F.R. sec. 61.341 Definitions:

"Process wastewater means water which comes in contact with benzene during manufacturing or processing operations conducted within a process unit. Process wastewater is not organic wastes, process fluids, product tank drawdown, cooling tower blowdown, steam trap condensate, or landfill leachate.

Waste means any material resulting from industrial, commercial, mining or agricultural operations, or from community activities that is discarded or is being accumulated, stored, or physically, chemically, thermally, or biologically treated prior to being discarded, recycled, or discharged.

Waste stream means the waste generated by a particular process unit, product tank, or waste management unit. The characteristics of the waste stream (e.g., flow rate, benzene concentration, water

content) are determined at the point of generation. Examples of a waste stream include process wastewater, product tank drawdown, sludge and slop oil removed from waste management units, and landfill leachate."

/5 Vol. 57, No. 252, Fed. Reg., 62660, December 31, 1992