NPRA BWON SSMMU Panel Discussion Question and Answer

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there is an allowance to "open" BWON-affected WMUs during maintenance and repair and an allowance to shutdown closed vent systems and control devices during maintenance and/or repair of a WMU.[4] Additionally, startup and shutdown of control devices and treatment processes and periods where these devices are not operated as designed were contemplated in the recordkeeping requirements inasmuch as records are required to be kept of these events.[5] However, the BWON does not explicitly provide an "exemption" from uncontrolled benzene waste accounting during these periods. Although it may be interpreted that the above references implicitly provide an exemption from calling waste managed during these periods uncontrolled, there does not appear to be clear precedent of this interpretation. Given the lack of clear regulatory language, the moderator believes that the answer to each of the questions above depends on the compliance option selected and the corresponding methodology that is required to be followed in the rule to estimate the uncontrolled benzene quantity.

6 Mg "Treat to Target" Discussion

The answers to each part of the question above appear to be less subject to interpretation under the 6 Mg "treat-to-target" compliance option. To begin, it is worth reviewing how the 6 BQ is calculated. As indicated in §61.355(k), the 6 BQ is the uncontrolled benzene waste quantity counted at the location where the waste enters the first uncontrolled WMU. For wastes that are never managed in controlled WMU, the benzene quantity is counted at the point of waste generation. For wastes that are managed and "treated" in BWON-controlled WMUs, the waste is counted to the 6 BQ where it enters the first uncontrolled WMU. The uncontrolled benzene accounting under the 6 BQ includes "treated" wastes, which are counted after they leave the treatment process and enter an uncontrolled WMU and/or are discharged.[6]

An important distinction under the 6 BQ is that the treatment standards in §61.348 were not intended to apply. The 6 BQ is a "treat to target" option that requires only enough treatment to meet the 6 Mg limit. What this means is that, to the extent that there is a maintenance, startup, shutdown, or upset of a treatment system that limits the effectiveness of the treatment, there is not a deviation from the BWON treatment standards because there are no treatment "standards" under the 6 BQ compliance option.[7] However, the consequence would be that the benzene concentration in the (treated or untreated) waste, which should have historically been counted to the 6 BQ, is at a higher concentration. Therefore, the answer to Part (1) of the question could be interpreted to be

[4] See §61.343(a)(1)(i)(B) for tanks, §61.344(a)(1)(i)(B) for surface impoundments, §61.346(a)(1)(i)(B) and §61.346(a)(2)(i) for individual drain systems, §61.347(a)(1)(i)(B) for oil water separators, §61.348(e) for treatment processes, and §61.349(b) for closed vent systems and control devices.
[5] See §61.356(i)(1) and (5) for treatment devices and §61.356(j)(1) and (3) for control devices.
[6] It should be noted that the provisions of §61.355(k)(4) provide an exemption from the requirements to count the benzene quantity entering an Enhanced Biodegradation Unit if it is the first uncontrolled waste management unit.
[7] The treatment provisions of §61.348(a) are referenced in §61.355(k); however, the moderator believes that the purpose of this reference was to catch the requirements of §61.348(a)(2) where there is a reference to §61.343-347 in order to clarify that any treatment devices used to meet the 6 BQ "treat to target" standard must also meet the waste management unit standards. Phone conversations with EPA rule makers seem to confirm this interpretation.

that when a treatment device is shutdown or in upset mode, the benzene quantity is counted the same way it would be counted when the treatment device is operating properly – at the location where the waste enters the first uncontrolled WMU. In reference to Part (3) of the question, to the extent that the period of time the treatment device is down will compromise the 6 Mg limit, redundant treatment equipment (or surge capacity) may be necessary.

2 Mg "Basic Control Option" Discussion

Under the 2 Mg option, the answer to Part (1) is subject to interpretation. To begin with, facilities under the 2 Mg option are required to meet the §61.348 treatment standards under the rule. This means, in simple terms, that the waste must be treated to a flow-weighted annual average of less than 10 ppmw benzene, the benzene must be removed on a mass basis by 99%, or the waste must be directed to an enhanced biodegradation unit and the waste stream entering the EBU must be less than 10 ppmw.[8] The moderator believes that when a treatment device does not meet the aforementioned standards for a period of time it does not necessarily mean that the benzene quantity should be counted toward the 2 Mg exempt waste stream total. To understand this interpretation it is important to understand the fundamentals of the 2 Mg compliance option. The 2 Mg compliance option is a list of waste streams that a refinery elects to exempt from control and, therefore, not treat or recycle back to the process in accordance with the BWON. The 2 Mg list of waste streams, is for all intents and purposes, an excerpt from the TAB and the benzene quantity in each stream should be calculated consistent with the TAB calculation methodology.[9] What this means for the 2 Mg exempt waste stream list is that once the stream has been selected for control and directed to a treatment system it is considered controlled under the BWON. When there is an upset or MSS event that causes a treatment device to operate out of range or to bypass service, then the conditions surrounding that event must be recorded and reported appropriately (See Footnote 5.) However, the moderator does not interpret these conditions to cause each individual waste stream routed to the treatment device to be considered uncontrolled during that period. This means that the potential non-compliance or deviation would be with regard to the treatment requirements, not with regard to exceeding the 2 Mg limit, and would likely be subject to enforcement discretion.

Control Equipment SSMMU

In reference to Part (2) of the question, the moderator believes that SSMMU of a control device on a BWON-affected WMU would not cause the waste managed in the WMU to be considered uncontrolled and, therefore, count toward the uncontrolled benzene quantity under the 2 Mg compliance option or the 6 BQ compliance option. The SSMMU event must be recorded and reported per the provisions referenced in Footnote 5, but the event

[8] Refer to §61.348(a)(4), (a)(5) and (b) for a more detailed discussion on the requirements for the use of enhanced biodegradation for wastewater treatment.

[9] The 2 Mg compliance option is in contrast to the 6 BQ compliance option in that the 6 BQ is based on actual waste quantities versus the "maximum-type" waste quantities on which the TAB and 2 BQ are based. Furthermore, you are required to count treated wastes to the 6 BQ, whereas treated wastes are not counted to the 2 Mg total.

in and of itself does not cause otherwise controlled waste streams to be counted as uncontrolled. A good example of applying this interpretation is the use of carbon beds as WMU control devices If the regulatory intent was for wastes to be counted toward the uncontrolled benzene quantity during SSMMU of a control device, then each time that carbon is changed out the benzene quantity going through the WMU controlled by the carbon during the period that carbon is off line for change out would have to be counted toward the uncontrolled benzene quantity. That accounting would be a tremendous effort and does not appear to be contemplated in the rule, rule preambles, or in other agency guidance. This seems to indicate that there was no agency intent to require that a facility count wastes that are managed in a controlled WMU to the uncontrolled benzene quantity when the WMU's control device is down for SSMMU. However, it does appear that the lack of control during this period was a point of concern for the agency given that many Consent Decrees require that carbon canisters be operated in series.

It is worth noting that the general duty clause under the §61.12(c) states that "owner or operator of each stationary source shall maintain and operate the source, including associated equipment for air pollution control, in a manner consistent with good air pollution control practice for minimizing emissions." Therefore, to the extent that a system is not operated properly, is routinely a "bad actor", or maintenance does not occur in an timely manner, there may be an enforcement risk subject to enforcement discretion.

Redundant BWON Controls

In response to Part (3) of the question above regarding redundant controls or treatment devices under the 2 Mg and 6 BQ compliance option, the moderator believes that the question should be considered on a case-by-case basis. If control devices are properly maintained and every effort consistent with good engineering practices is made to keep the control device on-line, redundant control devices may not be required. The impetus would be on the facility to look at the frequency that control devices are offline and determine whether the provisions of §61.12(c) may be interpreted to drive redundant control for a certain application. As is well documented, however, caveat to this is that facilities under Global Settlements do generally have the requirement to operate redundant carbon canisters. Given the fact that EPA/DOJ felt the need to incorporate such a provision into many Consent Decrees as an enhancement to the BWON, it would seem to indicate that the BWON does not require redundant control devices.

<u>Question 3</u>:

How is the benzene quantity from an exchanger leak accounted for under the 2 BQ and 6BQ compliance option?

This situation has historically had differing interpretations and neither the BWON nor its preambles seem to have contemplated or addressed exchanger leaks. One of the first documented interpretations on the management of exchanger leaks under the BWON was published by EPA Region 6 in a letter to Baker Botts dated April 12, 2001. The letter was in response to a Baker Botts request to EPA to address the narrow issue of whether

or not benzene emissions from a cooling tower qualify for the BWON's "process vapor" exemption under 40 CFR §61.342(c)(1). EPA Region 6 thoroughly analyzed this narrow question and concluded that such emissions were not subject to the "process vapor" exemption. Based on this conclusion, EPA asserted that benzene entering a facility's non-contact cooling water system, exemplified by heat exchanger leakage, must be annually quantified for purposes of the facility's TAB. The letter also implied that such benzene must be included in a facility's 6 BQ/2 Mg compliance computation if the cooling water is not controlled for air emissions. However, the moderator believes that even if one concedes that the process vapor exemption is inapplicable to cooling water emissions, it does not necessarily follow that cooling tower water becomes a BWON waste stream prior to the point where cooling tower is blown down to the sewer system as cooling tower blowdown.

A more recent, and contrary, precedent on the management of exchanger leaks under the BWON can be seen in the 1st Amendment to the Koch Consent Decree. In Paragraph 69(b) of the amended decree it states that:

> "…the "point of waste generation" under 40 C.F.R. Sec. 61.341 of any of the FHR cooling tower systems affected by the Consent Decree shall be considered to be the point where the water is blown down to a sewer drain or other wastewater conveyance. For the avoidance of doubt, this means that so long as the facility is complying with the monitoring and repair requirements of subparagraph (b), cooling tower water combined with process fluids that have leaked into the cooling tower system shall not be considered a waste stream until after such water has been blown down to a wastewater conveyance."

Given the aforementioned precedents, it should be noted that answer to the original question may be further dependent on whether the cooling water system is a once-through cooling water system or a cooling water return system to a cooling tower.

Once Through Cooling Water System

In a once-through cooling water system the moderator believes that it would be appropriate to call the point of waste generation the location where the cooling water leaves the exchanger, the process vessel, and enters the sewer or cooling water collection system, the WMU. For this discussion it is assumed that the sewer or cooling water collection system is uncontrolled. Under the 6 BQ compliance option, the benzene quantity from the waste must be included in the uncontrolled benzene quantity. Under the 2 Mg compliance option, accounting of the uncontrolled waste is more involved. Recall that a facility under the 2 Mg compliance may exempt from control wastes with a benzene concentration of less than 10 ppmw without including the benzene quantity in the 2 Mg ledger. Therefore, for a 2 Mg facility with a once-through cooling water system, it would be important to document flow-weighted average benzene concentration of the discharged cooling water in order to determine whether the flow weighted annual average concentration in the cooling water is less than 10 ppmw. Given the high flow rate of cooling water systems, it is likely that the wastes generated during an exchanger

leak could be exempt under the 2 Mg compliance option even if the benzene quantity generated by the exchanger leak is greater than 2 Mg. It should be noted that under either compliance option (and for facilities with a TAB of less than 10 Mg) the benzene quantity generated due to a heat exchanger leak to a once through cooling water system would be included in the TAB.

Cooling Water Return System

As indicated in the Koch Consent Decree and EPA Region 6 letter, the point of generation for leaks from an exchanger to cooling water tower has historically been a point of contention. Thus, to begin to discuss this question as it relates to cooling water returned to a cooling tower, it is important to review the definition of a point of waste generation and WMU. The rule defines a point of waste generation as "the location where the waste stream exits the process unit component or storage tank prior to handling or treatment in an operation that is not an integral part of the production process…" This definition was clarified in the preambles to the rule where it states that a point of waste generation is where a waste stream leaves a process vessel and enters a WMU.[10] The rule defines a WMU as "a piece of equipment, structure, or transport mechanism used in handling, storage, treatment, or disposal of waste. Examples of a waste management unit include a tank, surface impoundment, container, oil-water separator, individual drain system, steam stripping unit, thin-film evaporation unit, waste incinerator, and landfill." Given these definitions, the moderator interprets that there is not a point of waste generation at the exchanger since the cooling water does not enter a WMU. Water enters the cooling water system and is returned to the cooling tower which is integral to the process. In this case, the point of waste generation would be where the cooling water is blown down from the tower to the refinery sewer system. With this being said, the uncontrolled benzene quantity from cooling tower blowdown would need to be included in the 6 Mg exempt benzene quantity. Conversely, the benzene quantity from the cooling tower blow down would likely not be included in the 2 Mg exempt waste stream list since the flow weighted annual average benzene quantity in the cooling tower blowdown would likely be less than 10 ppmw. It should be noted that under either compliance option (and for facilities with a TAB of less than 10 Mg) the benzene quantity in cooling tower blow down would be included in the TAB.

<u>Question 4</u>

During certain upset conditions in the crude desalting process, poor brine water effluent quality requires that the brine water bypass the controlled sewer line to an uncontrolled system. Since this isn't the normal operating condition, there generally isn't a mechanism to quantitatively track these conditions. Do these periods have to be included in the TAB?

Yes. The "point of waste generation" is the where the water leaves the desalter and enters a WMU. For TAB accounting purposes, the destination of the waste is not important. However, the desalter upset conditions would likely affect the flow weighted

[10] See Federal Register Vol. 57, No. 44 Pages 8021-8029 (March 3, 1992).

annual average benzene concentration in the waste stream. When the TAB is prepared, the desalter upset conditions must be accounted for by adjusting the flow-weighted annual average benzene concentration in the water from the desalter to include the periods of upset that may result in oil undercarry or elevated benzene concentrations in the water phase. As always, the waste quantity used to estimate the TAB contribution during the upset events must be based on either the (1) highest waste quantity from the past 5 years, (2) the maximum design capacity, or (3) measurements that are representative of maximum waste generation rates.[11]

How would the desalter upset conditions be accounted for under the uncontrolled benzene quantity (i.e., 6 BQ or 2 Mg total)?

Assuming the desalter brine water is normally controlled, the periods when the controlled sewer system is bypassed must be tracked and an effort made to characterize the flow and benzene concentration in the diverted waste. This condition would be a "hit" on the 2 Mg exempt waste stream list or 6 Mg uncontrolled benzene quantity that must be evaluated and updated each reporting year. It is important that the oil fraction be accounted for in the waste and it will likely be necessary to catch grab samples during these conditions to characterize the benzene concentration in the waste. It may also be appropriate to collect a sample in a graduated container and allow that sample to settle out in order to estimate the amount of oil undercarry present in the waste during upset conditions. This methodology will facilitate the development of the flow-weighted annual average concentration of the waste since the calculation must include the benzene in the oil and water phases.

[11] See §61.355(b)(5)(i).