

Supplemental Guidance for Air Emissions Control from Active Remedial Action Systems

(Supplemental to Subsection 62-770.700(5), F.A.C., and BPSS-4, Vacuum Extraction, Multiphase Extraction, Pilot Studies, Air Emissions Treatment, and Monitoring Requirements)

The following information is provided to clarify several issues regarding the correct interpretation and application of the requirements for air emissions control (Subsection 62-770.700(5), F.A.C., and program guidance document BPSS-4) during active remedial action. This document supplements and does not replace those other documents. Chapter 62-770 and program guidance document BPSS-4 should also be consulted for a complete understanding of the requirements for air emissions control during active remedial action. The issues are presented below in a Q&A format:

1. What is the intent and proper interpretation of the requirements for air emissions treatment during the first 30 days of remediation system operation? - Paragraph 62-770.700(5)(a), F.A.C., requires that vacuum extraction systems be equipped with a means of air emissions “treatment” for the first 30 days of system operation. After 30 days treatment can be discontinued if the untreated daily air emissions are less than 13.7 pounds per day. Some people have incorrectly interpreted these requirements to imply that during the first 30 days treatment efficiency only needs to be sufficient to reduce the air emissions to 13.7 pounds per day. This is not the intent. If during the first 30 days of operation the concentration of untreated vapors has decreased such that the influent untreated air stream has a contaminant mass of less than 13.7 pounds per day it does not mean that the air emissions control equipment may be bypassed or that the spent activated carbon no longer has to be changed. Also, except as provided in item 5 below, air emissions treatment also must be provided for a vapor extraction system or multiphase extraction system for the first 30 days of system operation even if the initial mass recovery at the first day of system startup is expected to be less than 13.7 pounds per day. Activated carbon that has experienced complete breakthrough is no better than no treatment at all, so leaving carbon in place after breakthrough of the final canister in series during the first 30 days of system operation is a violation of the rule requirement to provide “treatment” even if what goes in and comes out of the carbon is less than 13.7 pounds per day.
2. What removal efficiency is required? – The current guidance on vacuum extraction (BPSS-4) has an oversight in that provisions that appeared in previous program guidance regarding air emissions treatment efficiency were not included in the current guidance, and as a result it does not define what level of efficiency of treatment needs to be provided. However, it was the objective of the Bureau of Petroleum Storage Systems (BPSS) based on our interagency agreement with the Division of Air Resources Management that a high removal efficiency would be incorporated into the system design and maintained for the first 30 days of system operation. For instance, if the starting daily untreated air emissions was expected to be 26 pounds per day, it would not be appropriate to split the air stream and only treat half of it such that the daily emissions was 13 pounds per day, as that would be an effective treatment efficiency of only 50%. The entire vapor stream needs to be treated and to a high treatment

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efficiency. Complete removal should be the design objective in evaluating types of treatment processes that will be capable of an adequate removal efficiency and how those processes should be configured. Startup sampling or ongoing O&M sampling might indicate that actual operational efficiency might be marginally less than the design objective, like closer to 95% efficiency. In such case this will still be considered to be a sufficiently high percentage removal efficiency that will result in air emissions mass significantly less than 13.7 pounds per day and may be found to be acceptable.

3. How do these objectives affect the system design for granular activated carbon when it comes to canister size and number of canisters? – The system design and maintenance/sampling schedule need to both be considered together and optimized to ensure that there will not be breakthrough of the last carbon canister in series during system operation. There may be more than one way to accomplish this goal by balancing the number and size of carbon canisters against the frequency of site visits. Consideration must be given to all the factors involved in the breakthrough evaluation such as the daily mass to be removed, the activated carbon's potential to remove hydrocarbon mass, the pounds of carbon provided, the frequency of site visits to collect air samples, the lab turnaround time, and the timeframe to mobilize to the site to change the carbon following receipt of analytical results. There must be a high degree of assurance that it will not be possible for the system to experience breakthrough of the last carbon canister in series by the time that a sample analysis result of an air sample collected between the last two canisters has indicated that breakthrough of the next to the last canister has begun and corrective action to change out carbon can be taken.
4. The BPSS guidance on vapor extraction systems indicates that air emissions treatment is not required if a pilot study of less than 8 hours is conducted. How does this apply to multi-day pilot tests? – If a pilot test will be conducted over a several day period in which the vapor extraction component will be operated on more than one of the days, then the exemption from treating vapors would apply to each day as long as each daily vapor extraction operating period is 8 hours or less, even if the sum total of vapor extraction operation during the multi-day pilot test will exceed 8 hours. This explanation is contingent upon it being a legitimate pilot test and there is a design-data collection purpose for the vapor extraction component to be tested on more than one day. It is not appropriate when the cleanup consultant company is representing the proposed activity as a pilot test but no field measurements which will be useful for system design will be collected and the actual intention is to clean up contamination under the guise of a pilot study and in effect avoid seeking approval of a RAP with more detailed design and operational design data prior to initiation of active remedial action.
5. Are there instances in which air emissions treatment is not required? – Paragraphs 62-770.700(5)(b) and (d), F.A.C., indicate that in the case of bioventing or biosparging, *these systems shall be equipped with a means of air emissions treatment unless the Remedial Action Plan design is based on the optimum air flow rates that promote biological activity with minimal volatilization of hydrocarbons. This objective shall be confirmed by a pilot study or by air emissions sampling during startup.*

This requirement means that in the case of biosparging and bioventing air emissions treatment is not required if it is demonstrated the air emission would be very low or not detected.

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An Approval of Alternative Procedures would be necessary to allow other remediation technologies such as vacuum extraction or multi-phase extraction to operate without air emissions treatment. In some limited circumstances in which there is relatively limited contaminant mass in the subsurface, it may be possible to demonstrate that a comparable amount of vapors will be recovered and emitted by a vapor extraction or multiphase extraction system without air emission treatment as would result from a bioventing or biosparging system without air emissions treatment. Likewise, it may be possible to demonstrate that a comparable amount of vapors would be generated at a site with relatively limited contaminant mass in the subsurface as would be recovered and emitted from a vapor extraction or multiphase extraction system operated at a site with typical levels of contamination and with air emissions treatment, and as such it may be possible to demonstrate an equivalent level of protection of the environment and public health if the system is operated without air emissions treatment.

This would be a relatively unusual circumstance because if the contaminant levels were this low prior to the initiation of remedial action it is unlikely that active remedial action would be proposed and instead Natural Attenuation Monitoring (NAM) would be implemented. However, in some cases even though NAM might otherwise be the presumptive remedy because contaminant concentrations of groundwater are less than Source Natural Attenuation Default Concentrations (NADCs), previous NAM monitoring may have indicated contamination is recalcitrant and not reducing at a sufficient rate, or the time frame to complete site cleanup may need to be accelerated due to a pending site use such that there may not be time for embarking on a natural attenuation monitoring program of unknown duration.

In such a case that active remediation is proposed at a site that has groundwater concentrations below Source NADC levels, consideration may be given to an Approval of Alternative Procedures to not have air emissions control on a vacuum extraction or multi-phase extraction system if it is demonstrated through either a pilot test or startup sampling that untreated air emissions will be at low levels and comparable to what would be expected from a bioventing or biosparging system, or comparable to the final effluent from a remediation system at a site with more typical levels of contamination requiring active remedial action and with a high efficiency air emissions treatment system. As indicated in the first Q/A above, merely being less than 13.7 pounds per day is not sufficient. The daily emissions should be substantially less than that during the first 30 days. For the purposes of a demonstration to qualify for an Approval of Alternative Procedures from providing air emissions treatment the first 30 days of system operation, the untreated air emissions should be at or less than a level which would be expected for treated air emissions at a site with more typical groundwater contamination levels requiring active remedial action and with the air emissions treatment capable of 95% reduction; and for the purposes of this demonstration to qualify for an Approval of Alternative Procedures must be less than 1 pound per day of Total Petroleum Hydrocarbons (TPH).

When considering whether an Approval of Alternative Procedures is appropriate the existence of soil contamination with significant petroleum hydrocarbon mass being present in spite of the groundwater concentrations being below Source NADCs needs to be considered. For this reason a pilot test or startup sampling to verify concentrations below 1 pound/day of TPH is mandatory. Also, once it is established that air emissions treatment at startup is necessary, air emissions treatment must continue for the entire

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first 30 days of system operation. This evaluation procedure may not be used to discontinue air emissions treatment once it has begun prior to the conclusion of the first 30 days of operation.

The request for Approval of Alternative Procedures should be submitted to the BPSS team, local program office, or district office, and a copy to Thomas Conrardy of the BPSS.

6. How do air emissions control requirements for providing treatment the first 30 days of operation apply to episodic remediation systems? – Episodic remediation events are active remediation and not a pilot test. Therefore, they should be subject to the requirement to provide air emissions treatment from the first day of operation, even if the system will only be operated for 8 hours of the day, and continue for the first 30 days of system operation. Only the time of actual operation during an episodic event should count toward the 30 days and not the time between episodic events; however, an operational period of less than 24 hours during a day, like 8 hours or 12 hours of operation, would count as a full day toward the 30-day treatment requirement. An example is: If 3 separate episodic remediation events, each consisting of 4 consecutive days of 8 hours per day operation were conducted, this would count as 12 days toward the requirement to continue to provide treatment for the first 30 days of system operation, so air emissions control would have to continue on the subsequent remediation event. In a case of the contaminant levels at a site being low (generally Source NADCs or less) and it is believed the air emissions will be low but a pilot test has not previously been conducted to verify this assumption, then the initial episodic remediation event can be considered to be the equivalent of a pilot test and can be conducted for 8 hours or less without air emissions treatment but an air sample must be collected to determine whether the daily emissions during a typical episodic event will not exceed the levels indicated in item 5 above. Before continuing to operate the system for episodic events beyond the initial day of operation, the sample analysis results should be submitted to the Department with a request for Approval of Alternative Procedures as described in the response to question 5 above.

7. Can open-hole sparging of contaminated groundwater without air emissions treatment be conducted without prior authorization from the FDEP? – No. Open-hole sparging is considered to be Active Remedial Action and requires prior approval from the FDEP. The vapors generated by sparging the water in an open excavation during a petroleum storage system removal or contaminated soil excavation at a contaminated site can be substantial. There are considerations for local health, safety, and nuisance problems in addition to compliance with the rule requirements to provide air emissions control during active remedial action. If the open-hole sparging will be part of a remediation strategy included in a RAP, then the need for air emissions control and monitoring must be considered as part of the remedial design. If this procedure will not be conducted as part of remedial action authorized in a RAP, and instead is proposed to be conducted during an Interim Source Removal, please contact Thomas Conrardy at the BPSS to determine whether an Approval of Alternative Procedures to authorize open-hole sparging is appropriate and whether any provisions to control the rate of vapor generation or vapor treatment or monitoring need to be considered.

If there are any questions, contact Thomas Conrardy at (850)245-8899 or tom.conrardy@dep.state.fl.us