U.S. Environmental Protection Agency
Applicability Determination Index

Control Number: 0800041

Category:	NSPS
EPA Office:	CAMPD
Date:	11/20/2007
Title:	Process Tanks Defined
Recipient:	Cunningham, Lee
Author:	Alushin, Michael
Comments:	

Part 60, A	General Provisions	
	Kb	Storage Vessels for VOCs (post 7/23/84)

References:	60.110b(a)
	60.111b

Abstract:

Q1: Do the process and alcohol day tanks at Archer Daniels Midland's (ADM) dry mill ethanol production facility at its existing corn wet mill in Columbus, Nebraska, meet the process tank definition which exempts them from the control requirements of 40 CFR part 60, subpart Kb?

A1: Yes. EPA finds that these tanks are used within the process, are process tanks, and are not considered storage vessels subject to NSPS subpart Kb

Q2: Is the alcohol QC tank also a process tank and not a storage vessel under NSPS subpart Kb?

A2: No. EPA finds that this tank does not engage in the type of unit operations or other functions described for process tanks, and is outside of the process. The sampling performed at the tank does not qualify this tank as a process tank. It is subject to NSPS subpart Kb as a storage vessel.

Q3: Is the alcohol reclaim tank a process tank and not a storage vessel under NSPS subpart Kb?

A3: No. EPA finds that this tank serves as a feed vessel for reintroduction of material back into the process. It is not within the process, and is a storage vessel subject to NSPS subpart Kb.

Letter:

Mr. Lee R. Cunningham
Corporate Environmental Counsel
Archer Daniels Midland Company
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Decatur, Illinois 62526

Dear Mr. Cunningham:

We have reviewed your inquiry of March 5, 2007, regarding the applicability of 40 CFR Part 60, Subpart Kb, Standards of Performance for Volatile Organic Liquid (VOL) Storage Vessels (NSPS Subpart Kb), to certain ethanol tanks at Archer Daniels Midland (ADM) Company's ethanol plants. In addition to your
March 5, 2007, request, we have considered electronic mail correspondence from your company dated April 19, 2007, and May 25, 2007, a May 23, 2007, conference call, and conversations with your staff and counsel as recently as September. Our determination of applicability is provided for the Columbus, Nebraska ethanol plant. Requests for applicability determinations for other plants must be submitted in writing to the appropriate delegated state agency.

According to your March 5, 2007, request, ADM received a PSD permit from the Nebraska Department of Environmental Quality on October 20, 2006, to construct a dry mill ethanol production facility at its existing corn wet mill in Columbus, Nebraska. The ethanol plant will include fermentation and distillation processes followed by a finishing process. The finishing will include dehydration, nitrogen stripping, blending with denaturant and corrosion inhibitor, and filtering, followed by quality assurance/quality control (QA/QC) of the material (sampling, testing and segregation). Any product that does not meet the quality specifications is recycled back into the process.

Your request for an applicability determination pertains to five "proof ethanol" tanks. Those tanks are listed below:

- one 100,000 gallon Process Tank (EU-DM 54)
- two 500,000 gallon Alcohol Day Tanks (EU-DM 41 & 42) - one 500,000 gallon Alcohol QC Tank (EU-DM 43)
- one 500,000 gallon Alcohol Reclaim Tank (EU-DM 40).

Following a distillation process, raw ethanol is pumped into the Process Tank, and then sent through dehydration and nitrogen stripping to increase proof and remove impurities. The ethanol is then pumped to the Alcohol Day Tanks. From the Alcohol Day Tanks, the ethanol is converted to fuel-use ethanol by adding denaturant and corrosion inhibitor. The denatured ethanol fuel is pumped to the Alcohol QC Tank where it is sampled and tested to ensure that the ADM quality specifications are met. Any material that does not meet the specifications is sent to the Alcohol Reclaim Tank where it is gradually blended back into the Alcohol Day Tanks to be reprocessed. Material that meets the product specifications is pumped from the Alcohol QC Tank to three storage tanks used for shipping purposes.

ADM agrees with the Nebraska Department of Environmental Quality that the three storage tanks that hold the denatured fuel ethanol that meets the ADM quality specifications are subject to NSPS Subpart Kb. However, ADM believes the other five tanks referenced above qualify as process tanks under NSPS Subpart Kb, and as such would be exempt from the requirements of Subpart Kb for storage vessels. The
United States Environmental Protection Agency (EPA or the Agency) agrees with ADM that the Process Tank and the two Alcohol Day Tanks are process tanks. However, EPA has determined that the Alcohol QC Tank and the Alcohol Reclaim Tank are storage vessels subject to NSPS Subpart Kb for reasons discussed below.

Regulatory Language

NSPS Subpart Kb applies to . . . each storage vessel with a capacity greater than or equal to 75 cubic meters that is used to store volatile organic liquids (VOL) for which construction, reconstruction, or modification is commenced after July 23, 1984.
40 CFR Section 60.110b(a). Certain exceptions apply. See 40 CFR Section 60.110b. A storage vessel generally includes each tank, reservoir, or container used for the storage of volatile organic liquids, but excludes certain enumerated structures.

40 CFR Section 60.111b.

On October 15, 2003, Subpart Kb was amended to exclude process tanks from the definition of storage vessel. 68 FR 59328. Subpart Kb defines process tank to mean:

a tank that is used within a process (including a solvent recovery or raw material recovery process) to collect material discharged from a feedstock storage vessel or equipment within the process before the material is transferred to other equipment within the process, to a product or by-product storage vessel,

or to a vessel used to store recovered solvent or raw material. In many process tanks, unit operations such as reactions and blending are conducted. Other process tanks, such as surge control vessels and bottoms receivers, however, may not involve unit operations. (Emphasis added.)

40 CFR Section 60.111b

To qualify as a process tank the tank in question must be "within the process."
The Subpart Kb regulations do not define process. However, EPA has provided examples in the definition, the preamble and the response to comments document of what types of activities occur within process tanks, which again must be within a process. The definition identifies reactions and blending as unit operations that might be conducted in process tanks. The preamble to the final rule also lists fermentation and distillation. 68 FR 59330. The June 2003 response to comments document1 expands on this latter list and includes the following: fermentation, distillation, mixing and blending, condensing, filtering, and extraction.

The definition of process tank indicates that certain tanks that do not include unit operations may also qualify as process tanks. The definition identifies surge control vessels and bottoms receivers as such tanks, and the preamble to the final rule includes vessels used for surge control of wastewater and/or sludge. 68 FR 59330. The response to comments document includes pipeline surge control vessels. Any of these vessels would need to be located "within a process" to be covered by the process tank exclusion.

The types of processes covered in the process tank definition include solvent or raw material recovery processes. However, the preamble to the final rule clarifies,

[t]he EPA considers vessels that receive and accumulate solvent or raw material from recovery processes to be storage vessels, not process tanks. Such vessels serve the same function as virgin solvent and raw material storage vessels . . .

68 FR 59330

Applicability of NSPS to the Ethanol Proof Tanks at the Columbus, Nebraska Source

Process Tank (EU-DM 54)

The Process Tank receives material directly from the distillation process. From there the material is sent to dehydration and then nitrogen stripping. Consistent with the definition of "process tank" at 40 CFR Section 60.111b, the Process Tank (EU-DM 54) is therefore ". . . tank that is used within a process to collect material discharged from" equipment within the process before the material is transferred to other equipment within the process. . . It is a process tank as defined in the regulations; therefore, it is not a storage vessel and is not subject to NSPS Subpart Kb.

Alcohol Day Tanks (EU-DM 41 & 42)

The Alcohol Day Tanks also fit the definition of process tanks. These tanks are located after the nitrogen strippers and prior to denaturing. They are used, consistent with the process tank definition, "to collect material discharged from" equipment within the process before the material is transferred to other equipment within the process. . . 40 CFR Section 60.111b. As such, these tanks are process tanks, and are not storage vessels, so they are not subject to Subpart Kb.

Alcohol QC Tank (EU-DM 43)

The Alcohol QC Tank at the Nebraska facility contains ethanol which has been through the fermentation, distillation, dehydration, nitrogen stripping and blending processes, and holds the product from these processes. If the sample taken from the Alcohol QC Tank shows that the product meets the ADM specifications, the product is pumped into three storage vessels used for shipping purposes. If the sample does not meet specifications, the material is pumped back into the process, via the Alcohol Reclaim Tank.

Operations at the Alcohol QC Tank do not involve the type of unit operations or other functions (e.g., surge control or bottoms receiving) that are described in the rule, the preamble, or in the response to comments document. The operation performed at the tank is sampling. Obtaining a sample from a vessel at the end of the chemical and physical processing does not constitute processing as described

by the rulemaking. A tank which holds a product or by-product, whether on or off spec for ADM, is not involved in the same type of process functions as described in the rulemaking, and is no longer within the process.

Although ADM has stated that the Alcohol QC Tank is engaged in blending and mixing, there is no blending or mixing equipment in the Alcohol QC Tank. The denaturant and the corrosion inhibitor are not added directly to the Alcohol QC Tank, but are added in the pipeline to material exiting the Alcohol Day Tanks. The primary blending occurs in the piping. We do not consider the incidental mixing that occurs as material enters the Alcohol QC Tank as a mixing or blending process. Further, if the material in the Alcohol QC Tank is found to be off spec, the material is generally sent to the Alcohol Reclaim Tank, from which point it is sent back into the process. Although it is possible that a problem may be corrected simply by changing the amount of denaturant or corrosion inhibitor flowing into the piping, mixing in the piping with material from the Alcohol Day Tanks, and then entering the Alcohol QC Tank, the material is not actively mixed in the Alcohol QC Tank since the tank does not include any mixing or blending equipment. The Alcohol QC Tank simply holds the product of the process, ready for sampling.

Therefore, the Alcohol QC Tank is not a process tank; rather, it is a storage vessel as defined in the regulations. Since the Alcohol QC Tank has a capacity of greater than (or equal to) 75 cubic meters, is used to store a VOL, and construction will commence after July 23, 1984, the tank is subject to NSPS Subpart Kb.

Alcohol Reclaim Tank (EU-DM 40)

Product at the Nebraska facility that does not meet the ADM product specifications is pumped to the Alcohol Reclaim Tank. From there it is gradually sent back into the Alcohol Day Tanks for re-processing by blending with other material coming from the dehydration and nitrogen stripping processes. The piping is configured to allow the Alcohol Reclaim Tank to receive material from the Alcohol Day Tanks in the event that additional storage capacity is temporarily needed such as may occur in the event of equipment malfunction. No processing occurs in the Alcohol Reclaim Tank. It would normally function as storage for material being sent from the Alcohol QC Tank to the Alcohol Day Tanks for processing.

The Alcohol Reclaim Tank therefore serves as a feed vessel for reintroduction of material back into the process. The Alcohol Reclaim Tank itself is not within the process. It is a storage vessel, not a process tank.

This interpretation is consistent with EPA's decision to treat vessels that receive and accumulate solvent or raw material from recovery processes as storage vessels, not process tanks, as indicated in the preamble to the final rule. 68 FR 59330. These recovery processes contain process tanks, and produce material which may be used as a feedstock in the process. The storage of that material, which may be sent back into the process, is outside of the recovery process itself, and the tanks that contain that material are not considered process tanks.

Therefore, the Alcohol Reclaim Tank at the Nebraska facility is a storage vessel as defined in the regulations. Since the Alcohol Reclaim Tank has a capacity of greater than (or equal to) 75 cubic meters, is used to store a VOL, and construction will commence after July 23, 1984, the tank is subject to NSPS Subpart Kb.

This determination for the five proof ethanol tanks at the Nebraska ADM facility has been coordinated with the Office of Air Quality Planning and Standards, the Office of General Counsel, and EPA Region 7. Questions on this determination may be directed to Sally Harmon of my staff at 202-564-7012.

Very truly yours,

Michael S. Alushin, Director
Compliance Assessment and Media Programs Division
Office of Compliance

cc: Peter Wyckoff, Pillsbury Winthrop Shaw Pittman Dean Frommelt, Archer Daniels Midland