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# Tora Brief: New EPA Emission Standards Impacting Asphalt Storage Tanks

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Published October 2024

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## INTRODUCTION

The United States Environmental Protection Agency (EPA) just updated its volatile organic liquid (VOL) storage vessel regulations under the New Source Performance Standards (NSPS) program. The new rule, codified at 40 CFR Part 60, Subpart Kc (NSPS Kc), applies to VOL storage vessels constructed, modified, or reconstructed after 04 October 2023. This Tora Brief provides an overview of key aspects of NSPS Kc specifically focused on asphalt storage tanks, drawing comparisons to its predecessor, 40 CFR Part 60, Subpart Kb (NSPS Kb).

Note that NSPS Kc does not apply to pressure vessels designed to operate above 29.7 pounds per square inch, absolute (psia) and without emissions to the atmosphere. This exemption, which was also part of the old rule, applies to pentane bullet tanks, which are typically designed to operate around 250 psia with a nitrogen blanket to prevent emissions to the atmosphere. Additionally, similar to NSPS Kb, NSPS Kc does not apply to process tanks<sup>1</sup>, such as coating surge tanks.

## APPLICABILITY

Under NSPS Kb, smaller asphalt storage tanks (<39,890 gallons) were not likely to meet the general applicability or emission control applicability criteria due to the maximum true vapor pressure (MTVP) of asphalt at typical storage temperatures. Larger asphalt storage tanks ( $\geq$ 39,890 gallons) may have triggered NSPS Kb emission control requirements depending on asphalt storage temperature. *Figure 1* provides an estimate of asphalt vapor pressure relative to the NSPS Kb general applicability and emissions control applicability thresholds.

### Key Takeaways:

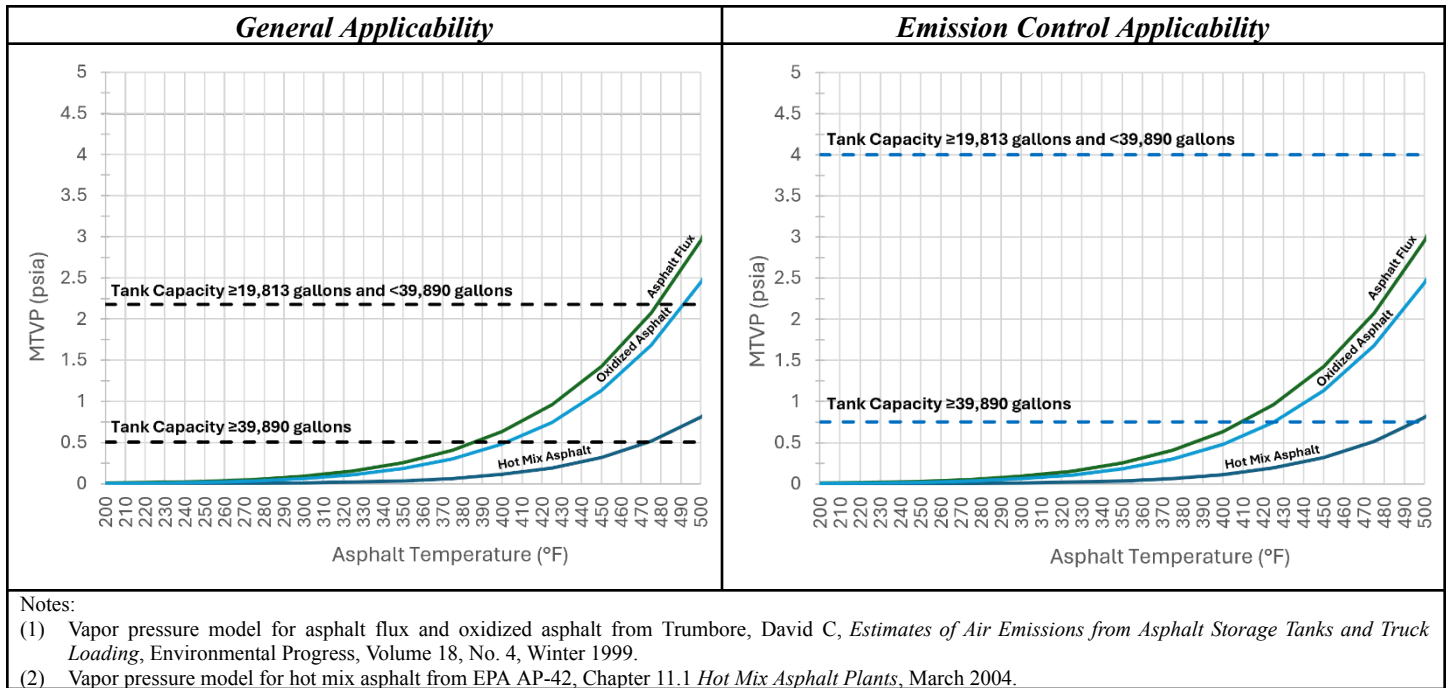
- It is easier to meet the general applicability criteria under NSPS Kc than it was under NSPS Kb.
- Asphalt storage tanks are more likely to trigger emission control requirements under NSPS Kc.
- Changing to a higher vapor pressure asphalt is considered a modification, causing an existing tank to become subject to NSPS Kc.
- NSPS Kc requires testing to determine vapor pressure of asphalt rather than standard reference texts, which was allowed under NSPS Kb.

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<sup>1</sup> Per 40 CFR §60.111c, the term “process tank” means a tank that is used within a process (including a solvent 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.

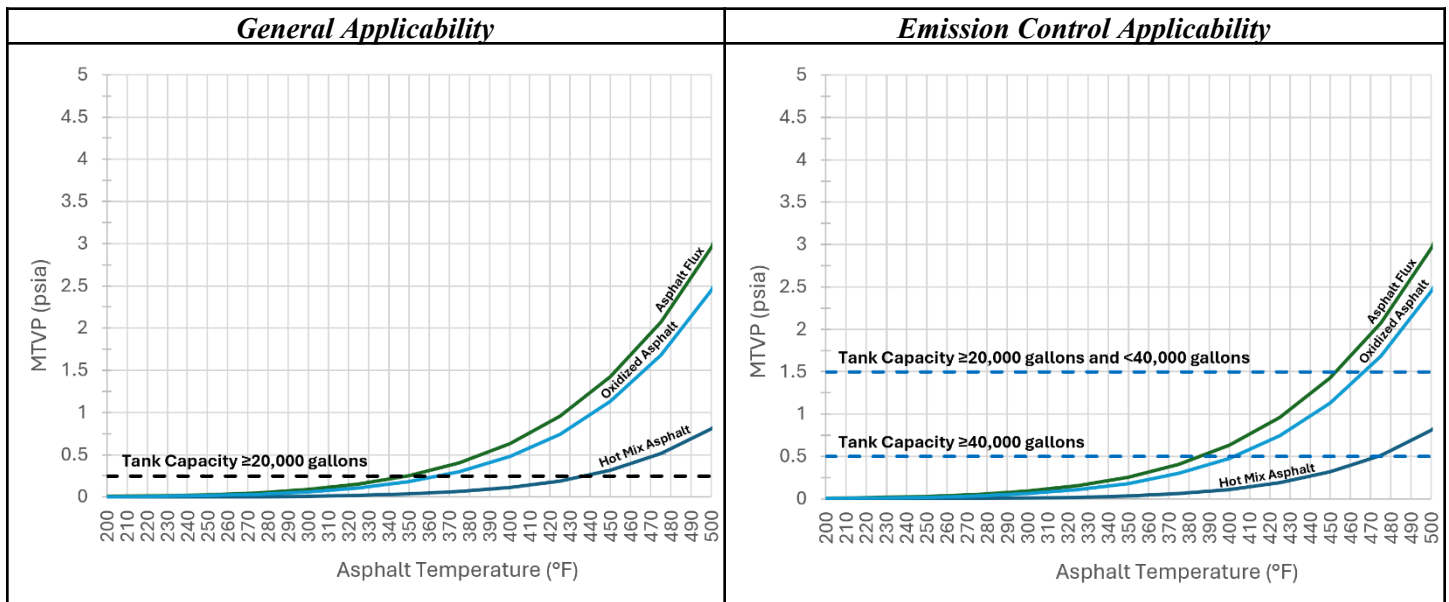


Figure 1 | NSPS Kb Applicability Criteria and Estimated MTVP for Various Asphalts



Under NSPS Kc, EPA has strengthened the general applicability criteria such that a new, modified, or reconstructed asphalt storage tank is subject to the new rule if it has a capacity greater than or equal to 20,000 gallons and stores an asphalt with a MTVP greater than 0.25 pounds per square inch, absolute (psia). EPA also strengthened the emission control applicability criteria by reducing the associated MTVP thresholds. **Figure 2** provides an estimate of asphalt vapor pressure relative to the NSPS Kc general applicability and emissions control applicability thresholds.

Figure 2 | NSPS Kc Applicability Thresholds and Estimated MTVP for Various Asphalts





Under NSPS Kb, EPA relied on the modification provisions at 40 CFR §60.14 to determine when an existing tank is considered modified and therefore an affected facility under the standard. The term “modification”, defined at 40 CFR §60.2, means a physical change or change in the method of operation that results in an emissions increase or emission of a pollutant not previously emitted.<sup>2</sup> Per the exclusion at 40 CFR §60.14(e)(4), the use of an alternative fuel or raw material would not constitute a modification regardless of whether it could result in an emissions increase. Due to this exclusion, changes in the type of asphalt stored were not considered modifications under NSPS Kb.

The new rule expands on the classic definition of “modification” and notes that the exclusion at 40 CFR §60.14(e)(4) does not apply under NSPS Kc. Specifically, per 40 CFR §60.110c(e)(1), storage of an asphalt with a higher MTVP than the asphalt historically used or permitted would be considered a modification under NSPS Kc.

## **EMISSION CONTROL REQUIREMENTS**

Like the old rule, the emission control requirements of NSPS Kc can be met through the use of internal or external floating roof tanks. However, the high viscosity of asphalt limits the feasibility of such tanks for asphalt storage applications. As such, compliance with the emission control requirements of NSPS Kc for asphalt storage tanks would require the routing of tank emissions through a closed vent system to a control device, fuel gas system, or process. If a control device is used, the required control device efficiency is 98 percent or greater, up from 95 percent under NSPS Kb.

## **MTVP DETERMINATION**

Another major change that EPA made under NSPS Kc is the methodology that is used to determine MTVP. Under NSPS Kb, MTVP could be determined through standard reference texts or other methods at 40 CFR §116b(e)(3).<sup>3</sup> Under NSPS Kc, reference texts can only be used for “mixtures for which you can define the range of concentrations for constituents in the mixture” per 40 CFR §113c(d)(1). For mixtures of indeterminate composition or unknown variable composition, such as asphalt, NSPS Kc requires that MTVP be determined through testing per 40 CFR §113c(d)(2).

## **FINAL THOUGHTS**

Careful tank sizing and temperature management could be used to avoid the substantive requirements of NSPS Kb, but that might not be the case under NSPS Kc because of the lower MTVP thresholds and the new modification criteria. Those involved in asphalt storage should quickly implement an MTVP testing and tank management program to ensure that existing tanks don’t receive a new asphalt with a higher MTVP. Also, those working on building new asphalt storage tanks should incorporate a thermal oxidizer or regenerative thermal oxidizer into their design plans.

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<sup>2</sup> See definition of “modification” at 40 CFR §60.2.

<sup>3</sup> The provisions of NSPS Kb at 40 CFR §60.116b(e)(2) do not apply to asphalt. Although asphalt may be considered a refined petroleum product, the definition of “ Reid vapor pressure” at 40 CFR §60.111b does not apply to viscous petroleum products.