May 28, 2021

Dear Sir or Madam,

Thank you for the opportunity to provide comments to Proposed Amendments to the Prohibitions on Use of Certain Hydrofluorocarbons in Stationary Refrigeration, Chillers, Aerosols-Propellants, and Foam End-Uses Regulation.

1. There is a misspelling of 'Celsius' in the definitions for Low Temperature Refrigeration System and Medium Temperature Refrigeration System.
2. In Table 3 there is no Celsius conversion nor "°F" indication for the upper bound (i.e., '35') of the Chiller w/ GWP ≥ 1,500 refrigerant entry such as was done for the 2,200 entry.
3. 'Appliance' and 'device' and 'machine' and 'equipment package' are used in definitions (e.g., 'appliance' in *Industrial Process Refrigeration*, but 'device' in *Refrigeration Equipment*, and 'machine' and 'equipment package' in *Chiller)* but it is not clear how these concepts are meant to be different. Please either clarify the intended difference among 'appliance' and 'device' and 'machine', or use one of these terms consistently throughout the document.
4. 'New Chiller' is defined, but that term is not used, per se, in Table 3 (i.e., the term used in Table 3 is 'Chiller (new)'). Please change the entries in Table 3 to the effect of 'New Chillers' for better clarity and legal certainty… likewise with 'Air-conditioning Equipment (new)'.
5. In the several 'New XXXX' definitions, it seems that the intent is that 'new' means 'after the effective date', but this is not robustly stated, and this results in some confusion about the specific date applicable to 'new'. Please include the explicit phrase 'after the effective date given in the table' for better clarity and legal certainty. For example, point (1) in New Chiller would become "(1) First installed <u>after the effective date given in the table</u> using …", and point (2) "(2) Modified <u>after the effective date given in the table</u> such that …."
6. The New Facility definition refers to, "any refrigeration end-uses listed in Table 3…and refrigeration end-uses listed in Table 4…" and the New Chiller definition refers to "any chiller equipment or chiller system end-use sectors listed in Table 3…"; and Table 3 and Table 4 have headings for both "General End-Use" and "Specific End-Use"; However it is only under the "Specific End Use" heading that the 'XXXX (new)' terms appear. Therefore, there is some misalignment between the tables and the definitions. For greater alignment with the tables and greater clarity and legal certainty, please change these definitions to "any refrigeration <u>specific</u> end-uses listed in Table 3…any refrigeration <u>specific</u> end-uses listed in Table 4…" and "any chiller equipment or chiller system <u>specific</u> end-use sectors listed in Table 3…", respectively.
7. Gases and Liquids are both types of fluids. It seems intended that Chillers be defined as devices which ultimately chill liquids, and that aspect is what differentiates Chillers from Air-conditioning Equipment. Therefore, please change the term 'fluid' used in the Chiller definition to 'liquid'. For example, air is, in effect, a heat transfer fluid (e.g. transferring heat between a person and an evaporation coil) so as written, the Chiller definition does not exclude the possibility of finding a Chiller to be, in effect, a type of air conditioner.

8. Continuing the use of older equipment is often a more environmentally friendly strategy than disposing of older equipment and replacing it with new equipment. Therefore, it is important that this regulation support the concept of older equipment being sold on from one end user to another (i.e. as second hand or used equipment), or from an end user back to the original equipment manufacturer for refurbishment, and perhaps upgrades, and then on to another end user (i.e. as refurbished equipment).

   The current wording supports this concept in the definitions for New Chiller and New Refrigeration Equipment by means of the phrase 'First Installed', implying that a 'second install' (i.e. equipment that has already undergone first install in California) is not considered to be 'new'. However, this is a rather difficult rationale to work through, particularly where a chiller might be embedded in other equipment (e.g., see the printing press discussion, below) in which case 'installed' is ambiguous as it could refer to the installation of the other equipment or installation of the chiller in the other equipment.

   Also, it seems in these definitions that in '…installed using new or used…' the 'using' is meant in the sense of 'comprised of', but this could also be misunderstood as something like 'how connections are made to the equipment'.

   Please consider making the following changes (which build the request of point 5, above)

   For New Chiller → "(1) First installed and put into service after the effective date given in the table and comprised of ~~using~~ new or used…"

   > And if feasible, add an explanatory (i.e., non-normative) note to the definition to the effect of "Note: used chiller equipment or a used chiller system in those specific end-use sectors that was first installed and put into service before the given effective date and which has not been modified after the effective date to the extent indicated in (2), are not considered to be new"

   For New Refrigeration Equipment → "(A) First installed and put into service after the effective date given in the table and comprised of ~~using~~ new or used…(2) Any refrigeration equipment in a new facility that is first installed and put into service after the effective date given in the table and comprised of ~~using~~ new or used…"

9. In the New Chiller definition, it is not clear why 'motor-bearing' components includes evaporators, compressors, condensers. 'Motor-bearing' more directly implies a friction control device – that is to say a ball bearing assembly or similar (e.g., the type of items found from a search of 'motor bearing components' on Google). Perhaps 'motor-bearing' was meant in the sense of bearing on the selection of motor size? Please express this in an alternate way so the general type of components intended is more clearly understood by 'lay' readers of the regulation.

10. In the definition for Refrigeration Equipment, there is a reference in the last sentence to 'industrial process refrigeration and cooling'. 'Industrial process cooling' is not a defined concept. Change this phrase to simply 'industrial process refrigeration'.

11. The definition for "Industrial Process Refrigeration" is confusing in that it appears to assert in the last two sentences that there can Industrial Process Refrigeration using a chiller and Industrial Process Refrigeration not using a chiller, but only the definition of chiller includes the idea of a machine making used of a vapor compression refrigeration cycle or absorption refrigeration cycle, so how can Industrial Process Refrigeration equipment be understood as potentially containing a prohibited substance if it does not contain a chiller? Where else is the prohibited substance expected to be? Please clarify the set of definitions to remove this seeming contradiction.
12. The exception (2)(B) in §95375(c) is titled as "Refrigeration equipment with 50 Pounds or Less Refrigerant". The definition of 'Refrigeration Equipment' includes "industrial process refrigeration and cooling (not using a chiller). HOWEVER the body of the exception excludes industrial process refrigeration that contains 50 pounds or less refrigerant *without prejudice.* That is to say, industrial process refrigeration appears to be excluded whether it contains a chill or not. Further, the exception references industrial process refrigeration in Table 3, and in table 3 Chillers are indicated (by means of the table section heading) as, in effect, a type of industrial process refrigeration. It seems clear the intention is that the scope of the exception should extend to chillers, but again the conceptual misalignment between Chiller, Industrial Process Refrigeration, and Refrigeration Equipment is confusing.
13. Following is a hypothetical situation meant to represent how chillers can be incorporated in industrial machinery. Please consider whether the regulation is worded so that the questions which follow are clearly answered. Of course, your answers to the questions would also be welcome.

    Consider a highspeed printing press, design to manufacture very low particulate labels. The specialist label base stock (i.e. the 'paper' of the label) requires a particular type of ink that must be kept cool until it is dried.

    Several small 'chillers' are embedded in the printing press (i.e.,as integral components) to keep various items of the press at the correct temperature – such as certain rollers and platens.

    These 'chillers' are self-contained units that have an internal refrigeration system that is used to chill an ethylene glycol solution (or other heat transfer liquid) that is circulated within the machine to the relevant parts.

    The temperature at the evaporator in these 'chillers' is between -10°F and 35°F, and the refrigerant has a GWP above 1,500 but below 2,200. The refrigerant charge is on the order of 25 to 40 pounds.

    There are several of these printing presses already in service in California, and future shipments to California are also anticipated.

    1. Will current owners/users of these printing presses i.e. in service before the relevant effective date in Table 3 (i.e., January 1, 2024) be able to continue using them after the relevant effective date in Table 3 (i.e., January 1, 2024)?

2. Will sales of new such printing presses be allowed in CA after the relevant effective date in Table 3 (i.e., January 1, 2024)?
3. Will a current owner/user of such a printing press be able to sell the printing press on as a used product (assume only minor cleaning and replacement of some consumable parts) to a new owner after the relevant effective date in Table 3 (i.e., January 1, 2024)?
4. If the chiller in one of these printing presses fails and needs to be replaced with a new chiller, will it be possible to replace the chiller with a like chiller after the relevant effective date in Table 3 (i.e., January 1, 2024)?

14. In Table 1, the criteria related to foams has been modified to focus on 'Foam Systems Used to Manufacture' certain types of foams. Because of this change, the prohibitions are now on a foam system "equipment or product" entered into commerce in the State of California after the effective date, rather than on the foam itself. However, there now seems to be an insufficient link between the new definition of 'foam' and the existing definition of 'foam system'.

    Suggestions:

    a. Modify the definition of "Foam System" as follows: ""Foam System" means a multipart liquid material that expands when mixed to form a <u>foam</u> ~~solid or flexible substance in which thin films of material separate pockets of gas~~."

    b. Modify the definition of "Foam" as follows: ""Foam" means a ~~product~~ <u>material</u> with a cellular structure formed <u>from a solid or flexible substance in which thin films of material separate pockets of gas and formed</u> via ~~a~~ <u>the</u> foaming process <u>of a foam system using</u> ~~in~~ a variety of materials that undergo hardening via a chemical reaction or phase transition."

    It seems now the exceptions (e.g., § 95375(b)(2)) remain worded as exceptions to prohibitions on certain foams themselves rather than exceptions to prohibitions on foam systems. For the sake of clarity, please reword the exceptions to the effect of the following.

§ 95375(b)(2) subsection	Recommended change
(A)	*Foam <u>System</u> End-Uses*. Except where specified below, the effective date for foam <u>system</u> end-uses identified in Table 2 of section 95374(b) of this subarticle are extended to January 1, 2022, for military applications and January 1, 2025, for space- and aeronautics-related applications, where reasonable efforts have been made to ascertain that other <u>foam system</u> alternatives are not technically feasible due to performance or safety requirements <u>of the foams</u>, including closed cell foam ~~product~~s and products containing closed cell foams manufactured <u>from foam systems</u> with the applicable prohibited substances on or before these dates.

1.	*Polystyrene: Extruded Boardstock and Billet*: The prohibited substances for foam systems which result in polystyrene extruded boardstock and billet are acceptable for use in this specific end-use from January 1, 2021, until January 1, 2022, in military applications and until January 1, 2025, for space- and aeronautics-related applications where reasonable efforts have been made to ascertain that other foam system alternatives are not technically feasible due to performance or safety requirements of the foams. Closed cell foam products and products containing closed cell foams manufactured from foam systems with the prohibited substances for polystyrene extruded boardstock and billet on or before January 1, 2022, for military applications or on or before January 1, 2025, in space- and aeronautics-related applications, may be used after those dates.
2.	*Rigid Polyurethane: Spray Foam Systems - High-Pressure Two-Component ("High-Pressure RP")*: The prohibited substances for High-Pressure RP foam systems are acceptable for use in High-Pressure RP foam systems from January 1, 2020, until January 1, 2025, only in military or space- and aeronautics-related applications where reasonable efforts have been made to ascertain that other foam system alternatives are not technically feasible due to performance or safety requirements of the foams. Closed cell foam ~~product~~s and products containing closed cell foams manufactured from foam systems with the prohibited substances for High-Pressure RP foam on or before January 1, 2025, may be used after that date.
3.	*Rigid Polyurethane: Spray Foam Systems - Low-Pressure Two-Component ("Low-Pressure RP")*: The prohibited substances for Low-Pressure RP foam systems are acceptable for use in Low Pressure RP foam systems from January 1, 2021, until January 1, 2025, only in military or space- and aeronautics-related applications where reasonable efforts have been made to ascertain that other foam system alternatives are not technically feasible due to performance or safety requirements of the foams. Low pressure two-component spray foam system kits manufactured with the prohibited substances for Low-Pressure RP foam systems on or before January 1, 2025, for military or space– and aeronautics-related applications may be used after that date.

Best Regards,

-Lauren Crane

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