Organization of Agreement States

Beth Shelton, Chair, Tennessee
Sarah Sanderlin, Chair-Elect, New Jersey
Keisha Cornelius, Past Chair, Oklahoma
J. Niki Minnick, Treasurer, Pennsylvania
David Matos, Secretary, Georgia
Meghan Cromie, Director, Colorado
Phillip Peterson, Director, Colorado
Steve Seeger, Champion, Tennessee

February 19, 2025

Tamara Bloomer, Acting Director, MSST
U.S. Nuclear Regulatory Commission
Washington, DC 20555–0001

Dear Ms. Bloomer,

At the request of the Nuclear Regulatory Commission (NRC), the OAS Executive Board (Board) surveyed the Agreement States on SECY-24-0085, Proposed Rule: Regulatory Framework for Fusion Machines. The survey included three questions as requested from the NRC and a fourth question included by the Board. The survey sent to the Agreement States is attached to this letter. The Board received responses from 11 Agreement States and the questions and summary of responses are below:

1. Of the options listed in enclosure 5, which option would work best for your State? (NRC question)
    - Option 2 would be the most objectively correct (and consistent with the Advance Act) in that a fusion machine is, in fact, a particle accelerator. Additionally, there are not extensive (or really any in our state) regulatory requirements that apply to particle accelerators that should not apply to Fusion Machines.
    - Option 1b.
    - Option 1 would be best, either a, b, or c would work. It appears that option 2 would be difficult to implement a separate fee category for fusion systems if they are defined as indistinguishable from particle accelerators.
    - 1B.
    - Option 2 appears to be the most appropriate choice.
    - Option 1A as best for the state program, however any of option 1 approaches would minimize potential for state program burden. Options 2 and 3 appear to only confuse the issue or potentially create more issues in the future. Especially were pointed out, should the state not want to regulate fusion machines, or the state Agency for Nuclear Projects decides to prevent/prohibit fusion machines in the state.
    - Option 1B.
    - Option 2 works for our state.
    - Our state would be ok with Options 1b or 2.

- Our state recommends option 2 as that option closely aligns with the definition provided by the ADVANCE Act, is consistent with established meanings of the term ‘particle accelerator’, and allows for rules to be developed which specifically apply to particle accelerators or fusion machines during the ongoing rulemaking. Regardless of how ‘fusion machine’ and ‘particle accelerator’ are ultimately defined, a fusion machine does accelerate particles, and our state prefers to have the regulatory definitions acknowledge that. Our state believes it is short-sighted not to choose option 2 due to the listed cons.

  The first con listed for option 2 affects States with particle accelerator licenses such as our state. While we have anticipated that fusion machines will be given distinct requirements in upcoming rulemaking, our current particle accelerator licensees should not be affected by including the definition of fusion machine in the definition of particle accelerator. Our state does not support the creation of a single rule to govern all particle accelerators including fusion machines as we believe fusion machines have distinct risks. Our state believes rules specific to fusion machines can be developed despite the inclusion of ‘fusion machine’ in the definition of ‘particle accelerator’.

- Not applicable to our state’s agreement.

2. Would the decision to move forward with option 1B negatively affect your State? (NRC question)

   - This option seems to exclude a fusion machine as a particle accelerator and that appears to be both inconsistent with reality and the intent of the Advance Act.
   - If Fusion Machine is defined separately then it could be worked into our Radioactive Materials Program Rules, if it is a subset of particle accelerators then I believe it would have cross-jurisdictional issues (Dept of Community Health vs DNR).
   - It does not appear that option 1B would negatively affect our State.
   - No.
   - For questions 2-4, the primary concern is that States are still in the process of determining how to regulate the x-ray component of these machines. Assigning a Compatibility B designation would require them to adopt definitions and requirements that may not yet align with their regulatory frameworks. Many States do not currently have fusion technology, meaning they lack regulations for this type of equipment and will likely rely on the Suggested State Regulations (SSR) for guidance as they develop their own policies.
   - No significant difference to the state program as they both say the same thing in two different tones.
   - No.
   - No.
   - No negative effects.
   - Option 1B would have few negative impacts to our Agreement State program and its positives are similar to those for Option 2. Our state does not foresee issues with the regulation of its current particle accelerator licenses from option 1.B.
   - Not applicable to our state’s agreement.

3. What are the effects of making 'fusion machine' a compatibility B designation? (NRC question)

   - The proposed definition appears to require that both elements (1) and (2) be met in order for a device to be considered a fusion device. The compatibility B designation may not allow for the states to modify in order to treat and regulate a machine that is capable of transforming atomic nuclei, through fusion processes, into different elements, isotopes, or other particles but not able to directly capture resultant products as a fusion machine. It seems like a fusion device being operated, even in the development stage should be regulated consistent with a fully operational fusion machine.
   - If it is separated out from particle accelerators then we could add it to our rules, if not separate then DCH would have to deal with it.
   - Greater flexibility for this definition is beneficial. This should be a compatibility C designation. We do not see the negative impact that would have to the NMP if this was a compatibility C. If this is made a compatibility B, we would appreciate the reasoning in that determination and why compatibility C would be inadequate.
   - None.
   - No impact, we do not have licenses or actions open for fusion machines.
   - States need the ability to change these definitions if there is a need. Currently our state would be fine with the proposed wording. However, because the x-ray programs are already established in the States, many may have an issue if they must adopt the language exactly how the NRC has it.
   - For questions 3 and 4, it will give us as an Agreement State less flexibility to refine own definitions, however, fusion is still a field where a lot of research is in progress. We don't know yet which other fusion machines will be invented in the future and how rule has to change to include all these new inventions. With the compatibility B designation, we will ensure uniformity of regulation on a nationwide basis. This will make it easier for licensees, the NRC and the agreement states to communicate with each other since research is going on all across the U.S.
   - While we agree with the OAS Board regarding Compatibility C for the 'fusion machine', a Compatibility designation of B would be manageable for our state.
   - Our state does not believe that fusion machines (or the amended section of 'byproduct material') constitute activities that cross jurisdictional boundaries and therefore should not be assigned a compatibility B designation. Designating either (or both) as compatibility category B would deny Agreement States the ability to use their experience to inform these definitions and could potentially impact regulations for State x-ray programs.

     Our state recommends compatibility category C for the definition of 'fusion machine' and the amended section of the 'byproduct material' definition. In each case, designating as category C requires Agreement States to adopt the same essential objectives which ensures a given device meets a minimum radiation safety standard in each jurisdiction. Most fusion machines are permanently installed in shielded vaults. Consequently, our state does not believe such devices will typically have "direct and significant effects in multiple jurisdictions." For devices installed in a single location, therefore subject to a single jurisdiction, our state does not agree that "essentially identical" consistency is necessary across the National Materials Program.

     The only area where our state has identified a potential cross-jurisdictional issue is for devices produced or distributed under one regulatory authority and used under another. However, our state believes that compatibility category C requires sufficient matching to the NRC's definition that these issues would be minimal.
   - Not applicable to our state's agreement.

4. What are the effects of making the amended section of ‘byproduct material’ a compatibility B designation? (Agreement State question)

    - It is unclear why only 3(ii)(A) is designated as compatibility B, while 3(ii)(B) is H&S and a change to remove or to not include the portion of the phrase "if made radioactive by use of a particle accelerator that is not a fusion machine" would change what is captured by the definition (i.e. it appears that as written in the draft all materials made radioactive by a fusion machine are byproduct material rather than just those that are produced, extracted, or converted after extraction for use for a commercial, medical, or research activity). Additionally, the phrase "if made radioactive by use of a particle accelerator that is not a fusion machine" does not make sense if the definition of a particle accelerator already specifically excludes fusion machines.
    - Would involve making sure that our entire rule is consistent. I don’t see it as in issue, but it would take some time to update.
    - Similarly to above, we believe this definition should remain H&S. This seems like an unnecessary compatibility requirement when H&S has been adequate to this point.
    - None.
    - Impact is minimal as we are currently working on a major overhaul of program regulations.
    - Our state is not sure about how the change in compatibility will affect us at this point. We believe the draft language will be ok for our program. This definition is also in our statute. We are currently getting legal advice as to whether the definition in the statute will have to change, too.
    - Our state feels that if the amended section were deemed Compatibility B, this could mean undue efforts in implementation of the change.
    - Not applicable to our state’s agreement.

One item that was identified by several Agreement States is they have a definition of ‘byproduct material’ within their respective governing State statute. Any changes that may be required to the State’s statute to align with the ADVANCE Act will take a legislative effort and may not be able to be readily accomplished.

Sincerely,

Beth Shelton Digitally signed by Beth Shelton
Date: 2025.02.19 09:41:34 -06'00'

Beth Shelton, Chair
Organization of Agreement States
Tennessee Division of Radiological Health
Davy Crockett Tower, 9th Floor
500 James Robertson Parkway
Nashville, TN 37243

Attachment: email survey to Agreement States, ‘fusion survey - please respond by 2/18/2025’