RECORD #69

TITLE: Guidance on Test Conditions for Activated Charcoal Using Methyl Iodide

FICHE: 65690-087

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Central File
TMI Site r/f
TMI PO HQ r/f

September 24, 1981

July

already on HPPOS #69

Mr. Fred Leckie
Nuclear Containment Systems, Inc.
1225 Dublin Road
Columbus, Ohio 43215

Dear Mr. Leckie:

The subject of what conditions are applicable for laboratory methyl iodide tests is certainly not straightforward, as you indicated in your letter of July 7 (attached). Your letter has been referred to my office for resolution. With ANSI and ASTM standards, regulatory guides, and technical specifications, it can be a confusing area.

First, plant technical specifications are the over-riding controlling document. If these technical specifications list specific conditions, perform the test under these conditions. If some conditions, but not all are specified, then the ASTM procedures in ASTM D3803-1979 "Standard Test Methods for Radioiodine Testing of Nuclear-Grade Gas Phase Adsorbents", should be invoked for the remainder of the conditions. If challenged, a technical case can easily be made for using the ASTM procedures.

Now, if the technical specifications refer to Regulatory Guide 1.52, Revision 2, March 1978, then page 6 of this document points you in the right direction. In Section C.6.b.(3), the reader is directed: "Representative samples of used activated carbon pass the laboratory tests given in Table 2." Table 2 (on page 7 of Regulatory Guide 1.52) refers to Table 5-1 of ANSI-N509-1976 for the test conditions (see the third column in Table 2), and also specifies the allowable penetration. As an example, for two inch systems outside containment with heaters, used carbon should be tested per test 5.b of ANSI-N509-1976, to a penetration of less than 1%, except 70% relative humidity is applicable, not 95%.

Now there are two minor variations. ANSI-N509-1980 has now been published, and does not number the tests. The applicable test (i.e., Test 5.b) is labeled as Methyl Iodine, 30°C, 95% R.H. Again, note that Regulatory Guide 1.52 says to perform the test at 70% relative humidity with a penetration of 1% (and this takes precedence over the 95% relative humidity and 3% penetration in ANSI-N509-1980). Also, N509-1976 refers to the RDT M16-1T for detailed procedures, whereas N509-1980 refers to ASTM D3803. The issuance of N509-1980 can be interpreted as allowing the utility an option. They can either literally invoke their technical specifications and use N509-1976. Or, since N509-1980 has been issued and is an update, they should be able to use N509-1980, with its temperature

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of 30°C instead of 80°C. Technically, the best way to go is to use N509-1980, since it is an update and refers to the latest industry approved test procedures (ASTM D3803). No field inspector should object, since the utility is increasing its safety margin by using the latest industry accepted guidance. Therefore, I will answer your specific question on testing when the specification refers only to Regulatory Guide 1.52: use the latest industry accepted guidance and test at 30°C, 70% relative humidity to a methyl iodide penetration of 1% with ANSI-N509-1980 and ASTM D3803 as the basis. (This, I repeat, is an update of the technical specification, which indicates to use N509-1976).

The second complication is a system with no air heaters. It does not follow to test at 70% relative humidity, and no column in Table 2 of Regulatory Guide 1.52 applies. Testing should be performed according to Test 5.b of ANSI-N509-1976, which is updated (again) by the test labeled Methyl Iodine 30°C, 95% relative humidity in ANSI-N509-1980 (with ASTM D3803 for detailed procedures). Acceptance criteria should be based on the accident analyses performed: If 90% credit was assumed in the accident analysis, the allowable penetration is 5%; if 70% credit was assumed in the accident analysis, the allowable penetration is 10%. Therefore, again to answer your specific question: For systems with no heaters test the used carbon at 30°C, 95% relative humidity and ASTM D3803 procedures, to a penetration based on that assumed in the accident analysis.

I hope this clears up your technical concerns. If you have further questions, please feel free to contact me at 301-492-8361.

Sincerely,

-S-

William Gammill, Chief
Effluent Treatment Systems Branch
Office of Nuclear Reactor Regulation

Attachment: As Stated

bcc: W. Kreger
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NUCLEAR CONTAINMENT SYSTEMS, INC.
NCS
1225 DUBLIN ROAD COLUMBUS, OHIO 43215 614-481-3395

July 1, 1981

Dr. Ronald R. Bellamy
1448 Woodhaven Drive
Hummel Town, Pennsylvania 17036

Dear Ron,

Since talking with you, Frank and Don this morning, I am now totally confused.

Don had the idea that all tests would go toward the ASTM, 30°C and 95% R.H. Frank's idea was that Table 5-1 of ANSI N509-1980, which is 30°C, would apply. In Reg. Guide 1.52, Rev. 2 of March 1978 under Table 2 it refers to Table 5-1 of ANSI N509-1976 (Rev. 1) which is 80°C.

I feel that what is in print is the interpretation that the NRC field inspectors are going to use, if the plant Technical Specifications refer only to Reg. Guide 1.52, 1978.

I would appreciate it if you would send me a written statement on how I can satisfy our customers who only have Reg. Guide 1.52 for used carbon, as to the proper temperature, relative humidity and the allowable percent penetration.

This has really confused the old man, I hope you can help straighten me out! I appreciate your help.

Sincerely yours,

Fred

Fred D. Leckie

FDL/pnp