



Austin Master Services
Radiological • Remediation • Engineering

Austin Master Services
PO Box 275
Pottstown, PA 19464

January 6, 2014

Ohio Department of Health
Radiation Protection Division
ATTN: Mr. Chuck McCracken
246 North High St
Columbus, Ohio 43215

SUBJECT: Response to ODH comments (January 3, 2014) regarding Austin Master Services, LLC application for a radioactive materials license.

Mr. McCracken,

Austin Master Services (AMS) is in receipt of your letter dated January 3, 2014 detailing questions/comments regarding our application for a category 03219 Radioactive Materials License. We have carefully reviewed ODH's comments and respectfully submit the following correspondence that details actions Austin Master Services has taken to comply with, ODH's review.

ODH Comment 1:

“Many of the documents contain reference to USNRC and/or USDOE radiation protection regulations. It's paramount that AMS understand that as an ODH radioactive materials licensee you must comply with Ohio Revised Code 3748 and the Ohio Administrative Code rules promulgated there under. That said, it will not be necessary at this time to modify all of your RPP procedures, etc... to cite the applicable ODH regulations, but it will be necessary for you to understand and comply with the ODH regulatory equivalent of any cited USNRC and/or USDOE regulation.”

AMS Response:

AMS acknowledges our understanding that ORC 3748 and OAC rules promulgated thereunder are solely applicable to all licensed activities in Ohio. Further, AMS has revised the first page of each of our corporate RPP procedures to read AMS acknowledges our understanding that ORC 3748 and OAC rules promulgated thereunder are solely applicable to all licensed activities in Ohio. Further, AMS has revised the first page of each RPP procedures to read: "Austin Master Services, LLC is in compliance with Ohio Law's Revised Code Chapter 3748: RADIATION CONTROL PROGRAM".



Austin Master Services
Radiological • Remediation • Engineering

Austin Master Services
PO Box 275
Pottstown, PA 19464

ODH Comment 2:

“Our review finds a few instances where the AMS QAP conflicts with AMS RSP for example the "free release criteria" in the AMS QAP is ANSI 13.12 limits however the AMS RPP and AMS RSP: RP-AMS-016 both list USNRC Regulatory Guide 1.86 limits for unconditional release. ODH finds that AMS RSP procedures RP-AMS-001 through RP-AMS-034 are sufficiently protective of public health and therefore acceptable for use in Ohio.”

AMS Response:

AMS acknowledges our understanding that all licensed activities in Ohio will be implemented in accordance with RP-AMS-001 through RP-AMS-034. AMS is in the process of revising our corporate operating procedures to specifically address our licensed operations in Ohio. For instance our Free Release Procedure (AMS RP-016) is currently being revised to establish release criteria values promulgated in the Appendix to Ohio 3701:1-43-15.

ODH Comment 3:

“In “4 Authorized use” of your “Radioactive Materials License Request” you requested authorization for “Solidification and treatment of waste”. Additionally, on page 3-2 of AMS QAP you include under section 3.0 Scope of Work, “Blending of volumetric materials containing higher than background concentrations of NORM to produce disposal volumes that meet the State of Ohio landfill disposal requirements” as a proposed licensed activity.”

“Notwithstanding the above, on December 30, 2013 you sent an email stating that your initial operations will in fact not include a facility to down blend. As a result, we are not reviewing or commenting on anything related to your proposed TENORM down-blending operations at this time. If at some point in the future, you wish to resume discussions relative to purposeful dilution of TENORM wastes (down-blending) and assuming that you gain ODH approval, your license will have to be amended.”

AMS Response:

AMS acknowledges our understanding that our initial license will not include authorization to process or perform "Purposeful Dilution" of waste material. With that said, AMS is expeditiously taking positive steps toward obtaining the capability to perform down-blending operations. We are fully aware that our license must be amended prior to



Austin Master Services
Radiological • Remediation • Engineering

Austin Master Services
PO Box 275
Pottstown, PA 19464

commencement of this type of work.

ODH Comment 4:

“Your ISOCS methodology to EPA 901.1M laboratory comparison did not produce the definitive results that would allow ODH to approve it for use as a stand-alone instrument to demonstrate compliance to ODH regulatory criteria at this time. Our review of the results of your pilot study finds that both AMS laboratory and ISOCS, more time than not, under report the radioactivity concentration as determined by a NELAC accredited laboratory. ODH has no issues with ISOCS being used to characterize and/or provide a go/no-go evaluation to pre-determine if a regulatory criterion might be met. However, at this time AMS must employ other methodologies delineated in its’ RP-AMS procedures when documenting compliance.”

“That being said, ODH will accept an AMS proposal for creation of a sampling and analysis procedure specific too TENORM solid wastes that uses ISOCS as the primary means of demonstrating acceptance for TENORM waste disposal in an Ohio permitted landfill in combination with a robust Quality Assurance/Quality Control procedure that uses EPA 901.M sample analysis by AMS and a 3rd party laboratory. Implementation of such a procedure will allow for additional data to support ISOCS as a stand-alone device while at the same time, AMS is providing an expedited service to its clients.”

“The elements of a modified AMS Sampling and analysis procedure for TENORM solid wastes going to Ohio permitted landfills might include a process similar to below:”

- A. **“ISOCS analysis of a shipping container of TENORM solid waste. [Note: ODH & OEPA acceptance criteria is ≤ 6.99 pCi/g combined Ra226/Ra228 including background].**
IF: ISOCS finds that the combined Ra226/228 concentration is < 3.5 pCi/g, the container is acceptable for disposal in an Ohio landfill [Note $3.5\text{pCi/g} = \text{ISOCS set @} +90\%$ uncertainty].
THEN: Collect a composite sample from the container using SW846 sampling methodology. Label the composite sample and chart the ISOCS result.”
- B. **“For each 10 composited and homogenized samples from shipments that the ISOCS determined were acceptable and that were disposition into the same landfill, combine and homogenize then into a single container and sample for AMS lab analysis using EPA method 901.1M [dried, 21 day ingrowth]. Chart the PACE results for comparison to AMS lab results and ISOCS results. For every 10 composited and homogenized AMS sample collected, a split of that sample shall be sent to an independent lab (i.e., PACE) for analysis using EPA method 901.1M [dried 21 day**



Austin Master Services
Radiological • Remediation • Engineering

Austin Master Services
PO Box 275
Pottstown, PA 19464

ingrowth]. Chart the PACE results for comparison to the AMS lab results and ISOCS results.”

- * **“If at any time, an EPA method 901.1M lab analysis results shows ≥ 6.99 pCi/g THEN: all ISOCS use shall immediately STOP. An investigation shall be initiated by the Corporate RSO and the Project Health Physicist/SME to determine the reason for the exceedence. ODH shall be notified within 24 hours or upon completion of the investigation whichever is sooner for permission to RESTART ISOCS uses.”**

AMS Response:

AMS has included a revised sampling and analysis procedure for TENORM solid waste for ODH review along with this correspondence. AMS appreciates the example sampling and analysis plan provided in ODH’s response letter; it makes sense.

AMS acknowledges our understanding that until more ISOCS data can be provided to the ODH traditional survey methods, detailed in AMS-RP-016, must be employed to demonstrate regulatory compliance regarding free release of equipment. AMS is currently revising our free release procedure to incorporate methodologies described in the Multi-Agency Radiation Survey and Assessment Manual (MARSAME) that include in-situ measurements. The revised document will be made available to the ODH for review when completed.

AMS understands that a rigorous Quality Assurance/Quality Control Plan is paramount to successfully implementing our analytical program. However, ODH must be cognizant of potential data conflicts due to sampling errors, changes in sample geometry etc. AMS recognizes that it is unlikely ten or twenty homogenized composite samples taken of material contained in tanks found to be below a conservative decision limit will exceed the regulatory threshold (< 6.99 pCi/g Ra226/228 combined including background).

ODH has suggested that, “for each 10 composited and homogenized samples from shipments that the ISOCS determined were acceptable and that were disposition into the same landfill, combine and homogenize then into a single container and sample for AMS lab analysis using EPA method 901.1M [dried, 21 day ingrowth]”.

AMS respectfully requests that the ODH consider allowing AMS to composite (20) samples into a single QC sample instead of (10).

AMS also requests that the ODH consider allowing AMS to send the QC composite sample to an accredited lab for drying, grinding (done at accredited lab instead of AMS facility) and counting. Our reasoning for this request is the drying process would require a fume-hood, and filtered



Austin Master Services
Radiological • Remediation • Engineering

Austin Master Services
PO Box 275
Pottstown, PA 19464

exhaust that could perhaps require NESHAPS monitoring and/or permitting. The composite QC sample would be returned to the AMS lab for analysis and tracking.

AMS has read and understands the ODHs concern regarding stand-alone use of ISOCS for waste characterization.

Table 1-1 below contains the analysis data for solid samples that measured below 20 pCi/g. As can be seen by the data in the differential column for Ra-226, the ISOCS activity determination actually over-estimates the Ra-226 activity in the samples.

For the Ra228 differential comparison there are five of eight values where ISOCS underestimates the Ra288 activity as reported by the lab. However, these underestimates are mostly at absolute differentials of 1 pCi/g or less. The worst case is an underestimate of 1.31 pCi/g for a sample measuring 1.81 pCi/g at via lab analysis.

In conclusion use of the ISOCS results for activity determinations less than 20 pCi/g will most likely over-estimate the concentrations within the waste materials and as such provide sufficient conservatism to use those values without bounded conditions. While the Ra-228 may be underestimated the underestimates for the Ra-226 will encompass the uncertainty associated with the Ra-228 and as a consequence it is unlikely that a total activity of 6.99pCi/g pCi/g as measured by the ISOCS system will underestimate the actual lab activity concentration.

Table 1-1

Sample Number	Ra-226 pCi/g ISOCS	Ra-226 pCi/g 21 Day Lab	Ra-228 pCi/g ISOCS	Ra-228 pCi/g 21 Day Lab	Ra226 Differential	Ra228 Differential
FA005	1.5	1.34	0.5	0.84	12%	-40%
FA001	2.5	1.477	1.7	0.962	69%	77%
FA006	2.6	2.29	0.5	1.81	14%	-72%
FA002	3.4	1.677	0.6	0.719	103%	-17%
FA003	4.9	2.346	2.5	1.822	109%	37%
VC001	4.9	3.02	0.9	1.39	62%	-35%
FA004	6.9	2.33	1.3	2.297	196%	-43%
VC002	9	2.74	1.7	1.36	228%	25%

The AMS pilot study also compared in-situ ISOCS tank measurements against 21 day laboratory results (EPA method 901.1M), AMS average results were 5% higher than average laboratory results. AMS results exceeded laboratory values for two of the three waste containers. Admittedly, this is a very small sample set but we are confident that the ISOCS technology employed by AMS will continue to perform well. ISOCS is widely utilized for material, equipment and waste characterization at almost every NRC and DOE facility in the United States.



Austin Master Services
Radiological • Remediation • Engineering

Austin Master Services
PO Box 275
Pottstown, PA 19464

AMS agrees that a conservative approach coupled with a robust QA/QC Plan is prudent, however it is our opinion that 3.5 pCi/g combined Ra-226/228 (including natural background which has been determined as 2 pCi/g) will severely impact our ability to provide value to our customers. Specifically, if waste is found by ISOCS to be > 3.5 pCi/g but ≤ 6.9 pCi/g requires sequestration and laboratory analysis we believe our customers will be hesitant to employ our services. We respectfully request that the ODH reconsider the ISOCS decision limit at which waste is permitted to go to Ohio landfills. We have NO issues with performing the additional sampling and analysis tracking.

AMS understands that if laboratory analysis (EPA 901.1M) of the composite sample (comprised of 10 individual homogenized and composited samples going to the same disposal facility) exceeds the conservative decision level, all ISOCS work will cease until an investigation by the Corporate RSO and the Project Health Physicist/SME is completed. AMS understands that ODH shall be notified within 24 hours or upon completion of the AMS investigation, whichever is sooner. AMS further understands that ISOCS work will not resume without approval of ODH.

AMS respectfully requests that our initial license be issued without authorization to use ISOCS as a stand-alone technology for regulatory compliance determination. We do however request authorization to utilize ISOCS for waste characterization in accordance with our revised sampling and analysis plan (attached).

ODH Comment 5:

“In Section 3 of your “Radioactive Materials License Request” you request specific radioactive isotopes, forms and maximum amounts that are significantly different from what we typically license category 03219 service providers to use/process. I’ve attached an example of a typical category 03219 license for your review. With the addition of TENORM”, any chemical and/or physical form”, and “As necessary for the use authorized under item 9”. You should expect your initial license (assuming that down-blending and stand-alone ISOCS uses are not included) to contain this same information.”

AMS Response:

AMS acknowledges our understanding of the types of information and conditions that will most likely be contained in our initial category 03219 Radioactive Materials License.



Austin Master Services
Radiological • Remediation • Engineering

Austin Master Services
PO Box 275
Pottstown, PA 19464

In closing AMS would like to sincerely thank ODH for its expeditious review of our license application. We look forward to an open dialogue regarding our response to the States comments. Please contact me if you have any questions, additional comments or concerns.

Very Respectfully,

Kevin Kosko
Marketing Director
Austin Master Services
(937) 470-2655