



TO: Distribution  
 FROM: M. Quinn  
 SUBJECT: Radiation Safety Subcommittee Meeting of December 2, 2020

MEMBERS (P=Present, A=Absent):

S. Borton	A	D. Hahn	P	M. Quinn, Chair	P	P. Sedory	A
N. Chelidze	A	D. Hockin	A	D. Reitzner	A	K. Vaziri	P
J. Compton	P	R. Madiar	P	W. Schmitt	P	M. Zientarski	P
K. Gollwitzer	P	S. McGimpsey	A	M. Schoell, Deputy Chair	P		
K. Graden	P	D. Newhart	A	J. Scott	A		

Others Present:

### New Business

- Radiography** – K. Graden mentioned two radiography jobs coming up: ICB 12/5 and at HAB 12/12.
- Frisker/Wallflower Station Assessment** – M. Zientarski reported that RPCF is kicking of an assessment of frisker/wallflower scanning stations. The assessment plan has been sent to RSSC for peer review/feedback. Please send feedback by 12/4. The assessment itself is expected to assess existing areas for how instruments are mounted, spacing, convenience, accessibility etc. to establish ESH requirements for new areas moving forward.
- Electronic Dosimeters** – M. Quin & M. Zientarski mentioned that RPCF is looking into modernizing/consolidating electronic dosimeters. Currently have 3 models used throughout the Lab. Working on understanding the needs of each group to ensure any changes still meet the needs. Starting to look at new devices, reaching out to vendors, etc. to see what options are available.
- MC-7 Door Replacement** – W. Schmitt mentioned that he originally requested that the door be classified Group 2 (from a radiological area), but RSOs mentioned that enclosure was posted as RMA/CA so didn't need to be Group 2. FRCM 424 statement: clearly stated and documented process knowledge if metals clearly cannot contain radioactivity. W. Schmitt mentioned that MC7 enclosure postings are for beam-off situations, but is within the Radiation Area fence (posted for beam-on situations). Suggests that FRCM should be looked at to see if it would benefit from clarification. (Since posting for this area changes based on the operating conditions (CA/RMA for enclosure when beam off, RA fence when beam on).) HPI looking into this. M. Quinn thinks the door should be classified as Group 2 until we can confirm otherwise. M. Schoell mentioned that door replacement HPI also includes looking into operating power supply with ESS that had expired interlock tests.
- HCTT** – D. Hockin reported that HCTT is working on processing legacy waste for the spring. They are also storing tritiated water for winter.

### Old Business Carried Forward

**6. DOE O 435 Added to Prime Contract** – L. Reger discussed changes:

- requires that we absorb water before sending for disposal. Would be a lot, so working on an exemption for this requirement.
- Legacy waste that's not able to be classified as stored for decay. Would cost ~\$1.9M to dispose of. Looking for an exemption to this requirement, or an extension and looking into target project/funding to dispose of this waste.
- Having to dispose of waste that's not being stored for decay within 1 year. Have to dispose within 1 year of being received (date of waste pickup), with 90 additional days to allow for staging waste for disposal. Should be able to incorporate.

HCTT is working on implementation plan, will meet with FSO.

**7. Eating/Drinking Near Source Boxes** – M. Quinn mentioned that there's a meeting within RPO to discuss this in more detail. No progress to report yet.

D. Hahn reported that Lab 3 would still like their source box moved. K. Graden needs Building Manager ok to drill into wall to hang source box in new location (North wall of the Clean Room). K. Graden will continue working with D. Hahn and HCTT to do this work.

From 11/4 meeting, with one *clarification*.

D. Hahn asking for clarification on what's needed as far as eating/drinking near source boxes, from several recent emails, wondering if it depends on the size of the room, etc. What's required and what's needed for posting. Discussion:

- FRCM requires no eating/drinking in radiological areas
- FRCM disallows storage of radioactive material in cafeterias/etc.
- Nothing explicit in FRCM about this situation. So if we come up with new rule/guidance, need to be consistent.
- Do we want to say “no eating/drinking in any area where there is radioactive material”?
- Do we issue guidance to radiological workers/source users?
  - In one of the emailed instances, the individual wasn't a source user, so there may be people in the areas that would be left off of these lists.
  - Also, this area hasn't been used as a work space until COVID and people started looking for areas where they can work alone.
- How “far away” is good enough?
- Do we even need a new policy? What's the perceived hazard/risk is for someone eating/drinking in a Radioactive Material Area. Don't see a risk in RMAs. Do see a risk for radiological areas, so the requirements there are appropriate. If high enough Class/dose rates exist, would be posted as a radiological area. Don't see a risk for RMAs.
  - Potential risks would be possible inhalation/ingestion of low-level radioactive material.
  - But just because there's a presence of radioactive material, that doesn't necessarily mean the risk for ingestion exists.
- Sources in source boxes are well shielded and remain at RMA levels.
- Sealed sources are checked monthly for contamination, so don't see a risk for ingestion.
- Imposing additional restrictions would be a challenge to implement. Writing it in FRCM would be easy enough, but policing to ensure a water bottle isn't in an RMA would be difficult. And with no risk, don't see the need for additional layer of control.

- Concerns that an individual is using a source while eating/drinking, and the source box were to start leaking, then the risk is present.
  - If there's no risk, why does FRCM disallow source boxes in established eating/drinking areas. Seems like policies contradict themselves. Why do we disallow sources in established eating/drinking areas, but allow eating/drinking in RMAs?
    - *Clarification:* The referenced article is FRCM 415, which doesn't specify sources. FRCM doesn't prohibit source boxes in established eating/drinking areas. There are no policies in FRCM or source program documents that prohibit source boxes in established eating/drinking areas. There are no inconsistencies with respect to source use in RMAs vs. use of other radioactive materials in RMAs.
- Haven't seen anyone eating/drinking while actually using radioactive sources.
- Also don't believe it's a realistic scenario for the sources to suddenly start leaking.
- Sources shouldn't be treated any differently than other radioactive material. If we impose restrictions on any area containing radioactive material/sources, should be consistently applied for all such areas.
- Should we be telling people to eat/drink in only designated eating/drinking areas?
  - Not possible with new COVID restrictions. Only one person can eat there, so many people are eating in their offices/desks.
- Additional complication, do we look at other ingestion pathways (i.e., applying cosmetics/chapsticks)? Do we disallow that in RMAs too?
  - Concerns that anywhere where radioactive material are stored/used, there is a risk for ingestion and practices shouldn't be allowed.
  - 10 CFR 835 doesn't specify, so it's not a regulatory requirement. But still have concerns.
- Keep thinking about possible solutions. We want to take our time and get things right before changing policy.

8. **Accelerator Startup** – Linac, Booster, NIF, MTA, BNB, MI/RR, NuMI, Muon Campus, & FAST signed off/authorized to run beam. SY sign-offs pending construction work completion. Muon Campus running to g-2, M4 line locked off while they continue working on ARR pre-start items. R. Madiar confirming if FAST is in shutdown configuration what the ODH status is. J. Compton confirmed that FAST is in Shutdown. Will have to check on ODH status.

*Update: FAST's "shutdown" means work during the day and beam overnight, not like the "shutdown" for the other machines.*

9. **Dose to Public FSO Concerns** – Post-start recommendation from FSO with approval of ASE Rev 12 (MTA revision) highlighted FSO concerns about FNAL use of occupancy factors when calculating potential dose to the public. Recommended controls be put in place for any areas of concern when removing occupancy factor. Recommendation also mentions external DOE review. This stemmed from the DOE looking at Fermilab's site accessibility.

As the Fermilab site is closed to the general public, the otherwise publicly accessible areas of the site that could exceed public dose restrictions (if not for occupancy adjustment) do not represent a public risk. Prior to Fermilab allowing public access to the site, the areas that would then be publicly accessible, that could exceed public dose restrictions (if not for occupancy adjustment), must be posted as restricted to Fermilab

workers unless a subsequent DOE external review proposes alternative expectations that are subsequently accepted by the FSO Manager.

RP Departments looking into this. Planning for increasing area monitors (dosimetry badges) throughout the site as well as potential beam-on surveys. Increasing area monitor locations throughout the Lab to ~300 locations, including more publically accessible areas/site boundaries.

Current Controlled Area postings are based on 2000 hours per year. Not adjusting for occupancy factors, 8760 hours per year, is not something we've considered. We have designed facilities and our postings are also based on the 10 CFR 835 limits, which are based on 2000 hours in a year, which is considered to be extremely conservative for members of the public to be on site. Will have to see results from area monitors to understand this better.

Will also wait to see new Site Security Plan to understand any changes to public access to the site to see if there is a potential for some occupancy factors.

R. Madiar reported that there will be an 10 CFR 835 reiveu on the November/December timrframe. The plan for this assessment has been in the works since pre-COVID. However additional lines of inquiry from a security standpoing.

M. Quinn stated that review may be focused on our set of criteria (our occupancy assumptions) and if that's still appropriate.

New this meeting: M. Schoell reported that many new areas had TLDs deployed this quarter with spare dosimeters. S. McGimpsey, J. Fulgham, M. Vincent worked out logistics for Landauer reports, should be ready to get TLDs with location names starting January. Continuing to work on updating maps and procedures.

10. **Locked Buildings** – M. Schoell reported that some rooms withing buildings have additional security needs/requiremetns for access. Security Chief mentioned a training that will be rolled out eventually to allow for access, but in the meantime RPO will have a Security escort to assess these areas. Only two rooms impacted at this time. This will not impact routine “snoop” surveys.
11. **RPCF** – M. Zientarski reported that RPCF was evaluated for card reader access, for the front door and also inside for Cave 1 due to the neutron source. No timeline estimate yet M. Zientarski reported that the work to install new source into source projector was deferred during Tier 3 mitigations.
12. **NEXUS DD Neutron Generator** – D. Hahn reported that it's been removed from the Mu2e pit. The generator is moved to Lab G and the deuterium bottle is at Site 40. D. Hahn also reported that this is good because Mu2e DT Neutron Generator may be delivered soon.
13. **LBNF Site Prep** – M. Schoell reported that excavation work around the MI berm is complete, and documented with a Post-Assessment documented. MI beam resumed. NCenter steel investigation went well. Waiting for Project to determine next steps.
14. **Safety Assessment Document review** – No update.
15. **Accelerator Readiness** – No update.

- 16. **Contamination in Enclosures** – Beam operational, build-up surveys will resume soon.
- 17. **SARP** – K. Gollwitzer reported no new assessments for SARP.

**ALARA Topics**

- 18. M. Schoell reported that NuMI had a ground fault after horn scans completed, investigation showed ground fault repair required additional removal/replacement of horn. The horn was new this year, so no significant dose to personnel increase. Will require several configuration changes to finish up work.
- 19. M. Schoell reported 2020 Shutdown dose through Week 22 (ending Sunday November 15<sup>th</sup>) is 4,895 person-mrem, which is well below the pre-shutdown estimate of 6,759 person-mrem. Post-shutdown memo will be finalized after NuMI horn/target work complete.

**Operations**

J. Compton reported beam operations to approved areas. Currently encountering some issues with the Kautz Road Substation, which is holding off MI beam. KRSS PLC needs replacement part, which should be here this week, and will then make repairs and resume beam.

**PLACE AND DATE FOR THE NEXT MEETING: THE NEXT MEETING WILL BE ON JANUARY 6, 2021 AT 2:00 PM CENTRAL VIA ZOOM (MEETING INFORMATION WITHIN OUTLOOK CALENDAR EVENT).**

**FY2021 Minutes: ESH DocDB 6112**

**Distribution via E-Mail–**

Amber Kenney – Chief Safety Officer	Subcommittee Members
Eric McHugh	Bridget Iverson
Raymond Lewis	Nicole Gee
Others Present	
RPO Department	