

Significant Impacts of 10 CFR 835 Revision at Fermilab

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General Impacts - Bureaucratic

- Have to rewrite Radiation Protection Program (RPP) and secure approval
- Have to revise *Fermilab Radiological Control Manual* to match RPP and cross-reference
- Have to analyze impacts on work practices
- Propose/negotiate any exemptions identified as needed-none expected at present.

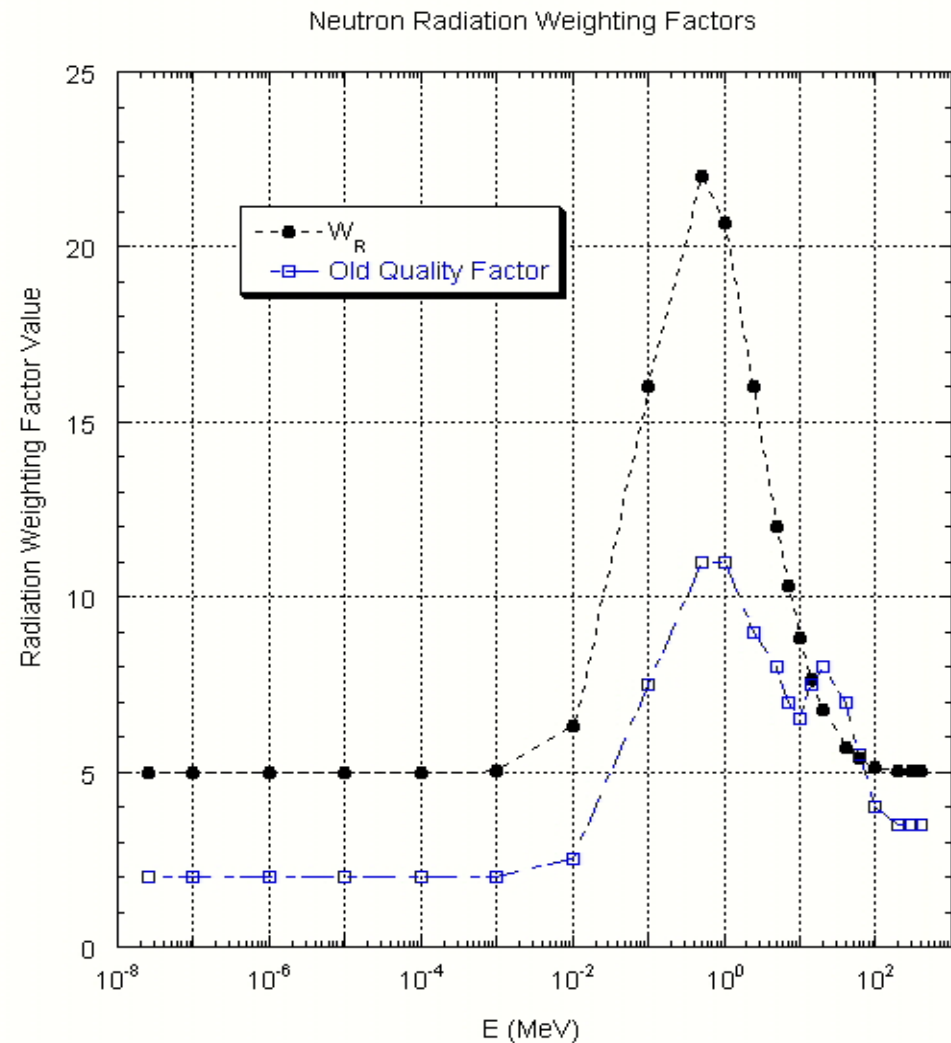
Minor Program Implementation Issues

- Change of “terminology”
 - Terminology is persistent-e.g., we still have people referring to “film” badges two changes of technology later.
 - “Dose equivalent” to “equivalent dose” will be difficult to burn in! People won’t believe it is a relevant change!
- Retraining of workers, RCTs, etc.?
 - Principal impact is minor changes to training content, 2 year retraining cycle should take care of the 3 year implementation deadline.
- Minor changes to sealed source program due to revisions of “Appendix E” values
 - Impact at Fermilab is minor, we regulate all sources on site regardless of activity level.
 - Would change reportability (ORPS and NTS) of events involving some sources.

The Neutron Radiation Weighting Factor Change

Affects:

- Neutron Dosimetry
- Instrumentation
- Shielding Calculations
- Occupancy Restrictions



Neutron Dosimetry

- We need and use neutron dosimetry and carry DOELAP accreditation
- Provided by a vendor service
- We need to coordinate the following:
 - DOELAP testing and approval procedures
 - Dosimetry vendor's algorithm (now different for DOE versus "other" customers)
 - Modify our badge-spiking program
 - Be sure DOELAP test program is "synchronized" with vendor's program changes

Instrumentation used in neutron fields

- Revision in calibration procedures
- Will have to “recalculate” fluence-to-dose-equivalent conversion factors used in practical radiation protection calculations.
- Cheer up! Our biggest Am-Be neutron source just became “hotter” in terms of dose equivalent; EXCUSE ME, “equivalent dose rate”!
- Fermilab prompt radiation instruments have built-in quality factor settings-will have to review radiation field measurements and perhaps modify these. Groan!

Shielding Calculations

- We use Monte Carlo shielding calculations extensively.
- In general neutron “dose” is a secondary output, not a primary one.
- Computer codes need to be investigated, with possible modifications of conversion factors, etc.
- May be a false alarm, not sure what is in the codes now!

Occupancy Restrictions

- We use a hierarchy of access controls, ascending in stringency with dose levels under “normal operation” and “accident” conditions.
- Many of our outdoor areas only see measurable dose under “accident” conditions.
- At nearly all such places, the radiation fields are neutron-dominated.

Occupancy Restrictions-cont.

- Up to now we have not implicitly used “occupancy” factors
 - May consider using such factors now!
 - Want to avoid a BIG, costly project to increase the size of fenced areas where radiation is almost never seen and hardly anyone ever enters. Adding shielding is not feasible!
- Will not solve all such problems
 - Have some indoor areas where new values of w_R will result in doses above our internal policy guidelines
 - May have to relocate people
 - Some of these and others are areas that have measurable doses under “normal” conditions where occupancy factors may not help.
- While “improbable”, could this change result in perceptions of people that we have been “insufficiently” protective before?