



# **ACMUI Report on Dose Reconstruction**

**Jeffrey F. Williamson, Ph.D.  
Chair, DRS Subcommittee**

# **Subcommittee Charge**

- **Independently review Region 3's dose evaluation**
- **Review the alternate dose reconstruction methodology**
- **Make recommendations regarding dose reconstruction**

# **DRS SUBCOMMITTEE**

**J. Williamson, PhD Chair**

**D. Eggli, MD**

**N. Hobson**

**L. Malmud, MD**

**O. Suleiman, PhD**

**S. Schwarz, RPh**

# **St. Joseph's Hospital Incident**

- **285 mCi I-131 orally administered**
- **Daughter's exposure**
- **Reg III: Daughter's exposure = 15 rem**
- **SNM: too conservative**

# **ACMUI DRS SC Investigations**

- **Review Reg III calculations,**
- **Review/critique Marcus/Siegel article**
- **Interview relevant parties and review documents**

# Findings

- **15 rem: most conservative estimate possible that is not totally implausible**
- **Distance reconstruction**
- **DRS estimate: 9 rem for Reg III's dwell-time scenario**

# **Findings: continued**

- **SJH disputes Reg III dwell-time scenario**
- **DRS: reduces DDE to 4-6 rem**
- **Inspection report improvement**

# **Siegel/Marcus Critique**

- **Use more sophisticated DR tools, e.g., distance reconstruction**
- **Use EDE, not DDE, as regulatory endpoint**
- **DRS: overly simplistic approximations used**



# **SNM vs. ACMUI DR**

- **Distance Reconstruction factor**
- **EDE vs. DDE factor**
- **Continuous decay factor**
- **Various other factors**

# **ACMUI Recommendations to NRC Staff**

- Doses near regulatory limit**
- Licensee disputes NRC DR**
- Plausibility of findings is suspect**
- Usual approximations suspect**

# **ACMUI Recommendations to NRC Staff**

- **Use EDE as DR regulatory endpoint for CFR 20 compliance**
- **Use EDE/DDE ranges and/or justify rejection of Licensee scenario**
- **Exempt caregivers**