

**U.S. NRC**

United States Nuclear Regulatory Commission

*Protecting People and the Environment*

**Status of the  
U.S. Nuclear Regulatory Commission's  
Initiatives on the Use of  $^{137}\text{CsCl}$  Chloride  
Sources**

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Air Monitoring Users Group Meeting

May 5, 2009

# Current Status

- CsCl radiation sources perform critical functions in blood sterilization, in medical and industrial research, and in instrument calibrations
- The security and control of radioactive sources has been significantly enhanced
- Integrated and comprehensive program in place for management and control of radioactive sources
- Continuing to work closely with domestic and international partners to improve security

# Significant Accomplishments

- Issued risk-informed Orders to increase security (Large Irradiators, Manufacturers/Distributors, Transportation, Increased Controls, and Fingerprinting)
- Developed electronic database (National Source Tracking System)
- Revised pre-licensing guidance
- Leads/participates in Radiation Source Protection and Security Task Force activities

# Radiation Source Protection & Security Task Force

- Established by Energy Policy Act of 2005
  - 15 federal agencies and two state organizations
  - Required NRC to Contract with National Academies
- Task Force issued 1<sup>st</sup> report, August 15, 2006
- Recommendations:
  - **Cesium-137 Working Group**
    - to “...assess the feasibility of phasing out the use of CsCl in highly dispersible form...” (Completed 9/2008)
  - Radiation Sources Working Group
    - Report due February 2009
    - Considers list of nuclides meriting protection
    - Social and economic disruption aspects of RDD
  - Alternative Technologies Working Group
    - Report due 2009
- Next Task Force report due to Congress in 2010

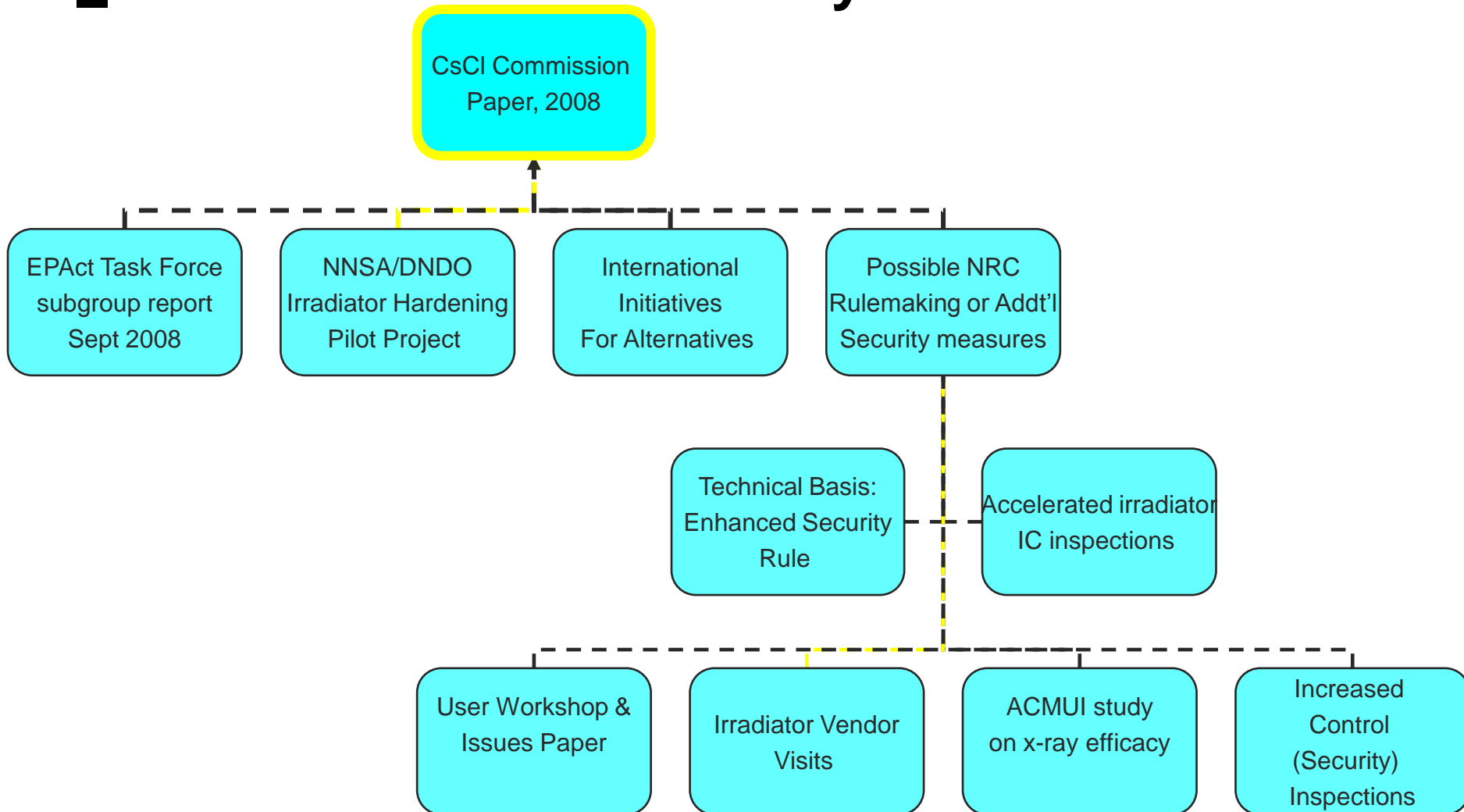
# Conclusions: CsCI Working Group's Report

- Immediate phase-out would not be feasible
- Step-wise phase-out *could* be feasible
- Challenges would have to be overcome
- Sufficient time would be necessary for replacement technologies to be established and for disposal pathways
- Sequences and time-frames would be critical
- Interim security measures are important

# House Bill H.R. 6818

- “Nuclear Facility and Materials Security Act of 2008”
- dated Aug. 4, 2008
- Highest-risk radiation sources that could be used to make a dirty bomb should be equipped with location tracking technology and less dangerous technologies should be used where possible

# Integrated Effort on Cesium Chloride Security



# Commission Paper, “Strategy for the Security and Use of Cesium-137 Chloride Sources” SECY 08-184\*

Application	IAEA Category	# of Licensees	# of Devices	% of Total Curies
Blood Irradiators	1-2	327	575	33.65
Research Irradiators	1-2	265	526	66.00
Calibrators	2	61	104	0.35

- **Option 1:** Enhance security and issue a Commission Policy Statement
- **Option 2:** Rulemaking to ban CsCl in soluble/dispersible form for blood irradiators, and maintain use of CsCl for research and calibration
- **Option 3:** Rulemaking to ban soluble/dispersible form of CsCl (for all applications)



# CsCl Source Security Update

- On 4-15-09, the NRC Commission reached a decision with respect to the staff paper, SECY-08-0814
- Commission agreed with staff paper that near-term replacement of CsCl sources in existing applications is not practicable and would be harmful to the delivery of medical care, research and emergency response capabilities.
- The Commission directed the staff to continue enhancing the security of CsCl sources, while encouraging further research for alternative chemical forms of  $^{137}\text{Cs}$
- The staff is also directed to develop a Commission policy statement detailing the Commission's emphasis on security of cesium chloride sources.

# Next Steps

- Develop a plan to implement Commission direction
- Assess implementation of voluntary hardening program
- Continue to monitor the threat environment, in cooperation with Federal Partners, and issue new security requirements as may be necessitated by emerging risks

# Challenges

- No apparent economic incentive for private industry to develop alternative chemical forms of CsCl
- Development of new form (i.e. high activity source in less soluble/dispersible form) may not be successful
- Different solutions are needed for the three major modalities of use: blood irradiators, research irradiators, calibrators
- May interrupt blood supply. Replacement constitutes significant cost impact on industry
- A disposal pathway, i.e., transportation packages and disposal site, must be developed prior to implementation technological changes



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