CVSA Level VI Program

Safety and Security Technologies for Radioactive Material Shipments

Safety & Security Technologies Study

- Started in 2005 with OCRWM Funding.
- OCRWM funding ended in 2009.
- EM gave CVSA funding to finish the report.

- CVSA Ad Hoc RAM/Security/ITS Committee
  - Examined current and emerging technologies for safety and security of radioactive material shipments
  - Site visits
  - Product reviews
  - HMCRP HM-04 report on emerging technologies

Safety & Security Technologies Study

- Completed several site visits to look at current technologies being used.

- Technologies were broken down into five categories.
  1. Inspection Technologies
  2. Security Technologies
  3. Radioactive Material Dose Rate Measurement and Isotope Quantification Technologies
  4. Shipment and Tracking Technologies (Tractor, Trailer, and shipping casks)
  5. Electronic Shipping Papers

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- Hazardous Materials Cooperative Research Program (HMCRP) (December 2006)

- Funded by Pipeline and Hazardous Materials Safety Administration (PHMSA)

- HMCRP is operated as an outreach program through the Transportation Research Board (TRB), which is part of the National Academy of Sciences.

- HMCRP Project HM-04: *Emerging Technologies Applicable to the Safe and Secure Transportation of Hazardous Materials* (December 2006)

Safety & Security Technologies Study

- HMCRP Project HM-04
  - Current technologies
  - Emerging technologies
    - Short-Term
    - Long-Term

- Committee monitored the progress of this project and waited for it to be completed.
- Received a draft copy in September 2010

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- March 2008 in Denver
- Invited other stakeholder groups
- Presentation on 9 different technologies

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CURRENT TECHNOLOGIES

- **Detection Technologies**

- **Authentication and Vehicle Disabling Technologies**

- **Tracking and Communications Technologies**

- **Electronic Vehicle Information Technologies**

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- Emerging Technologies
1. **Networked RFID/ubiquitous sensors and cargo monitoring.**
2. **Pressure gauges and chemical detection sensors.**
3. **Fiber-optic/photonic sensors & optical scanners.**
4. **Advanced locks and seals.**
5. **Intelligent video tracking & surveillance.**
6. **Wireless power.**

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- Emerging Technologies Continued

7. Nanopiezoelectronics.

8. Plastic thin-film organic solar cells.

9. Container integrity.

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- Recommendations

- – RFID, GPS, biometrics, seals and locks are currently available, tested, and have good performance records.

- – For the future DOE should choose most reliable, promising technologies and in the process:

  - Address the 5 application areas, in **particular** shipment security and tracking of trailers and casks

Safety & Security Technologies Study

- Involve the 4 regional state government groups
- Involve stakeholders from states which require en route inspections to potentially reduce these inspections due to new technologies used and accessibility by stakeholders
- Upgrade TRANSCOM to report dose rates in real time
- Follow progress of HMCRP Project HM-05 study on electronic shipping papers

http://www.trb.org/HMCRP/HMCRPProjects.aspx

QUESTIONS????