Introduction to DOE’s Office of Environmental Management

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Office of Waste Management
Office of Environmental Management

5 June 2013
Discussion Topics

- History and Scope of Environmental Management Program
- Progress
- Funding history and current fiscal environment
- Program goals
- Details of FY 2014 Budget Request
- Overview of waste and materials disposition
- “Hot Topics”
- Core Values
- Wrap Up
The Fuel Cycle ... DOE’s Manhattan Project History

- Irradiate fuel in reactors for defense purposes
- Fabricate uranium fuel
- Convert and enrich uranium
- Recovered uranium from spent nuclear fuel
- Mine uranium ore
- Remove spent nuclear fuel from reactor
- Reprocess spent nuclear fuel
- Recovered uranium from spent nuclear fuel
Irradiate fuel in reactors for defense purposes

Remove spent nuclear fuel from reactor

Reprocess spent nuclear fuel

High-level waste

Plutonium/Uranium for weapons fabrication

Low-level waste

Mine uranium ore

Recovered uranium from spent nuclear fuel

Low-level waste

Depleted uranium

Low-level waste

Mill tailings waste

Convert and enrich uranium

Fabricate uranium fuel
Irradiate fuel in reactors for defense purposes

Remove spent nuclear fuel from reactor

Reprocess spent nuclear fuel

Low-level waste

Idaho National Lab
Hanford, WA
Savannah River, SC

Fernald, OH
Hanford, WA
Savannah River, SC

Idaho National Lab
Hanford, WA
Savannah River, SC

Fabricate uranium fuel

Convert and enrich uranium

Mine uranium ore

Recovered uranium from spent nuclear fuel

Low-level waste

Idaho National Lab
Hanford, WA
Savannah River, SC

Depleted uranium
Low-level waste

Oak Ridge, TN
Portsmouth, OH
Paducah, KY

UMTRCA Sites
Fernald, OH
Moab, UT

High-level waste

Rocky Flats, CO
Oak Ridge, TN
Pantex, TX
Los Alamos, NM
Hanford, WA

Plutonium/Uranium for weapons fabrication

EM Site work scope ties directly to Manhattan Project mission
“Complete the safe cleanup of the environmental legacy brought about from five decades of nuclear weapons development, production, and Government-sponsored nuclear energy research”

...From a legacy of weapons production to the world’s largest environmental cleanup program

...Operating in the world’s most complex regulatory environment

EM clean-up enables DOE to maintain ongoing operations and other critical missions while achieving compliance with governing environmental laws.
EM’s mission is to clean up hazardous or potentially hazardous radioactive and other substances, much of which were generated in connection with the early days of the Nation’s atomic energy defense activities.

EM is building on past successes to complete ambitious remediation projects and treatment facilities.

EM operates one-of-a-kind nuclear facilities to manage high-level radioactive waste and dispose of materials like plutonium.

EM cleanup addresses the environmental legacy of America’s nuclear weapons research and production complex.
Safety is EM’s Top Priority

- EM conducts cleanup within a “Safety First” culture that integrates environmental, safety, and health requirements and controls into all work activities. This ensures protection to the workers, public, and the environment.

- Worker injury rates for EM cleanup work are significantly lower than averages in comparable industries and have decreased by about one third from FY 2009 to FY 2012.

- EM is further strengthening its organizational safety culture through several programs, including training over 850 senior federal and contractor managers in Leadership for a Safety Conscious Work Environment.
The Inherently High-Risk Work of Nuclear Cleanup

We work with some of the most dangerous substances known to humanity...

Workers using glovebox to handle plutonium

Performing first-of-a-kind tasks in highly hazardous work environments

Stabilizing spent (used) nuclear fuel

High level waste canisters
EM is fulfilling real legal obligations

Regulatory History

- DOE created EM to place a focus on bringing its sites into compliance, and entered into a series of site-specific enforceable cleanup agreements that provide the mechanism for bringing those sites into compliance.

- These agreements allow DOE to maintain ongoing operations and the critical missions they support while achieving compliance with governing environmental laws not only in EM but also in NNSA, Science and Nuclear Energy.

Regulatory Framework

- EM has approximately 40 compliance agreements across its various sites with Federal and state regulators based primarily on RCRA and CERCLA.

- Stakeholder input is required for most regulatory documents and can significantly impact requirements.
<table>
<thead>
<tr>
<th>Category</th>
<th>Progress through FY12</th>
<th>FY13 Planned Progress</th>
<th>Remaining</th>
<th>Life Cycle</th>
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<tbody>
<tr>
<td>Remediation Complete (# of release sites)</td>
<td></td>
<td></td>
<td></td>
<td>10,572 Sites</td>
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<tr>
<td>Industrial Facility Completions</td>
<td></td>
<td></td>
<td></td>
<td>3,877 Industrial Facilities</td>
</tr>
<tr>
<td>Radioactive Facility Completions</td>
<td></td>
<td></td>
<td></td>
<td>987 Radioactive Facilities</td>
</tr>
<tr>
<td>Nuclear Facility Completions</td>
<td></td>
<td></td>
<td></td>
<td>476 Nuclear Facilities</td>
</tr>
<tr>
<td>Material Access Areas eliminated</td>
<td></td>
<td></td>
<td></td>
<td>35 Material Access Areas</td>
</tr>
<tr>
<td>LLW and M/LLW disposed</td>
<td></td>
<td></td>
<td></td>
<td>1,567,758 m³</td>
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<tr>
<td>RH-TRU disposed</td>
<td></td>
<td></td>
<td></td>
<td>7,268 m³</td>
</tr>
<tr>
<td>CH-TRU disposed</td>
<td></td>
<td></td>
<td></td>
<td>150,262 m³</td>
</tr>
<tr>
<td>SNF packaged for final disposition</td>
<td></td>
<td></td>
<td></td>
<td>2,450 MTHM</td>
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<td>HLW packaged for final disposition</td>
<td></td>
<td></td>
<td></td>
<td>24,183 HLW Canisters</td>
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<tr>
<td>Liquid waste tanks closed</td>
<td></td>
<td></td>
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<td>239 Liquid Waste Tanks</td>
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<tr>
<td>Liquid waste in inventory eliminated</td>
<td></td>
<td></td>
<td></td>
<td>91,907,000 gallons</td>
</tr>
<tr>
<td>Non-enriched uranium packaged for disposition</td>
<td></td>
<td></td>
<td></td>
<td>736,801 metric tons</td>
</tr>
<tr>
<td>Pu or uranium residues packaged for disposition</td>
<td></td>
<td></td>
<td></td>
<td>107,828 kg of bulk</td>
</tr>
<tr>
<td>Enriched uranium packaged for disposition</td>
<td></td>
<td></td>
<td></td>
<td>8,198 Containers</td>
</tr>
<tr>
<td>Pu metal or oxide packaged for long term storage</td>
<td></td>
<td></td>
<td></td>
<td>5,089 Containers</td>
</tr>
<tr>
<td>Geographic sites eliminated</td>
<td></td>
<td></td>
<td></td>
<td>107 Sites</td>
</tr>
</tbody>
</table>
EM Has Significantly Reduced Risks to the Environment and Public

Completed cleanup on 90 of 107 former nuclear weapons and research sites

Packaged nearly 100% of EM’s plutonium and enriched uranium inventories for permanent disposition (over 13,000 containers)

Eliminated over 5 million gallons (enough to fill over seven Olympic-sized swimming pools) of radioactive liquid tank waste – glass/grout

Former plutonium storage vaults
Historical EM funding

(dollars in billions)

<table>
<thead>
<tr>
<th>Year</th>
<th>UE D&amp;D</th>
<th>Non-Def</th>
<th>Defense</th>
<th>Total</th>
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<tr>
<td>FY01</td>
<td>0.3</td>
<td>0.3</td>
<td>$6.4</td>
<td>$6.7</td>
</tr>
<tr>
<td>FY02</td>
<td>0.3</td>
<td>0.3</td>
<td>$6.9</td>
<td>$7.0</td>
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<tr>
<td>FY03</td>
<td>0.3</td>
<td>0.3</td>
<td>$7.0</td>
<td>$7.3</td>
</tr>
<tr>
<td>FY04</td>
<td>0.4</td>
<td>0.5</td>
<td>$6.6</td>
<td>$6.2</td>
</tr>
<tr>
<td>FY05</td>
<td>0.5</td>
<td>0.5</td>
<td>$5.7</td>
<td>$6.0</td>
</tr>
<tr>
<td>FY06</td>
<td>0.6</td>
<td>0.6</td>
<td>$6.0</td>
<td>$6.0</td>
</tr>
<tr>
<td>FY07</td>
<td>0.6</td>
<td>0.6</td>
<td>$5.7</td>
<td>$5.7</td>
</tr>
<tr>
<td>FY08</td>
<td>0.5</td>
<td>0.5</td>
<td>$5.7</td>
<td>$5.7</td>
</tr>
<tr>
<td>FY09</td>
<td>0.5</td>
<td>0.5</td>
<td>$5.5</td>
<td>$5.5</td>
</tr>
<tr>
<td>FY09 ARRA</td>
<td>0.4</td>
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<td>$5.2</td>
<td>$5.2</td>
</tr>
<tr>
<td>FY10 Aprop</td>
<td>0.1</td>
<td>0.2</td>
<td>$5.0</td>
<td>$5.0</td>
</tr>
<tr>
<td>FY 2011 Oper Plan</td>
<td>0.2</td>
<td>0.2</td>
<td>$5.0</td>
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<tr>
<td>FY 12 Aprop</td>
<td>0.2</td>
<td>0.2</td>
<td>$5.0</td>
<td>$5.0</td>
</tr>
<tr>
<td>FY 2013 HEWD</td>
<td>0.4</td>
<td>0.4</td>
<td>$4.9</td>
<td>$4.9</td>
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<tr>
<td>FY 2013 SEWD</td>
<td>0.4</td>
<td>0.4</td>
<td>$5.1</td>
<td>$5.1</td>
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</table>
## Budget Reality:
### EM Appropriations from FY 2008 - 2013

<table>
<thead>
<tr>
<th>Year</th>
<th>Request</th>
<th>Approp/Op Plan</th>
<th>ARRA</th>
<th>Delta</th>
</tr>
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<tbody>
<tr>
<td>2008</td>
<td>5,655</td>
<td>5,757</td>
<td>5,988</td>
<td>102</td>
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<tr>
<td>2009</td>
<td>5,528</td>
<td>5,991</td>
<td></td>
<td>463</td>
</tr>
<tr>
<td>2010</td>
<td>5,630</td>
<td>6,006</td>
<td></td>
<td>376</td>
</tr>
<tr>
<td>2011</td>
<td>6,047</td>
<td>5,665</td>
<td></td>
<td>(382)</td>
</tr>
<tr>
<td>2012</td>
<td>6,130</td>
<td>5,710</td>
<td></td>
<td>(420)</td>
</tr>
<tr>
<td>2013</td>
<td>5,650</td>
<td>5,290</td>
<td></td>
<td>(360)</td>
</tr>
</tbody>
</table>

*Values in Millions*
EM Funding Levels: FY 2012 – FY 2014 ($M)

<table>
<thead>
<tr>
<th></th>
<th>FY 2012 Enacted</th>
<th>FY 2013 Annualized CR</th>
<th>Sequestration</th>
<th>FY 2014 Total Request</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uranium Enrichment D&amp;D Fund</td>
<td>5,003</td>
<td>5,033</td>
<td>4,618</td>
<td>5,622</td>
</tr>
<tr>
<td>Non-Defense Environmental Cleanup</td>
<td>472</td>
<td>475</td>
<td>448</td>
<td>555</td>
</tr>
<tr>
<td>Defense Environmental Cleanup</td>
<td>235</td>
<td>237</td>
<td>224</td>
<td>213</td>
</tr>
</tbody>
</table>

(dollars in millions)
After 25 years of cleanup progress, the EM program’s budget, technical and regulatory challenges have changed significantly. In response to this changing environment, EM must take the opportunity to strategically refocus our cleanup program, maximizing all of our resources to best serve the American people and our local communities.

Key Challenges Facing EM

- Along with other federal agencies, EM is facing an uncertain fiscal environment.
- Major technical challenges have emerged, particularly for large construction projects.
- Deferral of work due to fiscal constraints has significantly increased the program’s total cost.
- Need clear linkages between technology development and deployment and end users.

The Path Forward

- In close consultation with stakeholders, work to optimize existing waste disposal processes and systems.
- Invest in targeted, applied technology development in areas where cleanup depends on the use of new technologies.
- Work with regulators and stakeholders to ensure that the regulatory framework for remediating each site is risk-informed, aligned with expected future funding levels and based on realistic scenarios for future site use.
Goal 1: Improve safety, security, and quality performance

Goal 2: Reduce the life cycle cost and risks of the nuclear legacy cleanup

Goal 3: Improve project and contract management

Goal 4: Achieve excellence in management and leadership
EM’s projected costs generally reflect the cleanup actions required to meet regulatory deadlines and other key cleanup goals.

A significant gap exists between EM’s projected costs and the available funding expected over the next decade.

Gap between projected cost and target is approximately $14 to $29 billion assuming availability of target as sites close.

Projected Cost to Go: $174 - $209B

- Compliance baselines were built assuming higher funding targets than EM is currently receiving.
- Anticipated funding levels may be below requirements level at many EM sites.
EM is developing advanced analytical tools to inform planning and budget.

Analysis of last year’s hypothetical flat funding cases showed the impact of flat funding:

- Funded ongoing operations such as SRS liquid waste, INL TRU, WIPP
- Prioritized mortgage reduction projects like River Corridor, PFP, ETTP, INL to free up outyear target
- Deferred SRS tank closure
- New ORP tank farm projects until RL transferred target in FY16-18
- Assumed Paducah GDP transfer costs would come from additional appropriations
Maintain a safe, secure, and compliant posture in the EM complex

- Radioactive Tank Waste
- Special Nuclear Materials and Used Nuclear Fuel
- Transuranic & Solid Waste
- Facilities D&D
- Essential Site Services
EM’s FY 2014 Budget Request:
Funding by Site

- Savannah River: $1,209M
- Oak Ridge: $413M
- Richland: $993M
- Idaho: $370M
- Paducah: $322M
- Los Alamos National Laboratory: $220M
- Program Direction: $281M
- Carlsbad: $208M
- Portsmouth: $152M
- West Valley Demonstration Project: $66M
- Nevada: $62M
- Other: $56M
- Moab: $36M
- SPRU: $24M

Total Request: $5.622B
EM’s FY 2014 Budget Request - $5.622 Billion Total

**Includes Program Direction, Program Support, TDD, Post Closure Administration and Community and Regulatory Support**

**Includes Safeguards and Security**

Percentages do not add to 100% due to rounding
Technology Development in FY 14 and Beyond
FY 2014 Funding: $24M

Maximizing waste loading in glass

Groundwater modeling

Mercury remediation

Separations technologies
• EM is an integrated, national program.
• No single site, project or programmatic activity can be considered in a vacuum.
• All strategic plans, regulatory decisions, waste disposition decision, policy change and budget request (etc!) are developed within the balanced, risk informed program – which prioritizes safety above all else and targets continued compliance, progress, fiscal responsibility and continuous improvement.
Major DOE Radioactive Waste Transfers

Waste exports from DOE Generator Sites are shown in the incoming shipment boxes for the treatment and disposal facilities. This map is not inclusive of all past or planned shipments.

EXHIBIT B
Network of Major DOE Radioactive Waste Transfers

Shipment lines do not portray actual transportation routes. This map is not inclusive of all past or planned shipments.

DOE Generator Site (no on-site disposal facility)
DOE Offsite Radioactive Waste Disposal Facility
DOE Offsite Radioactive Waste Treatment Facility

From Naval Reactor sites located in several states

EXHIBIT A
For Illustrative Purposes Only – Dated Information

Transuranic Waste Disposal Shipment
Transuranic Waste Processing/Storage Shipment
Spent Nuclear Fuel/High-Level Waste Disposal Shipment
Spent Nuclear Fuel Storage, Treatment, or Repackaging Shipment
Low-Level Waste/Mixed Low-Level Waste Disposal Shipment
Low-Level Waste/Mixed Low-Level Waste Treatment Shipment
Commercial Radioactive Waste Disposal Facility
Commercial Radioactive Waste Treatment Facility
High level waste (HLW) management

Hanford –
176M curies; 55M gallons
177 Tanks; ~ 9,700 canisters (projected)

Idaho –
37M curies, 900K gallons
15 tanks (11 closed); ~3,590-5,090 canisters (projected)

Savannah River Site – 292M curies;
37M gallons
51 Tanks (4 closed)
~3,600 canisters (2013); ~7,580 (total projected)

West Valley Demonstration Project—
(owned by NY)
~ 25M curies in
275 canisters;
4 tanks (emptied)
Spent nuclear fuel management

Hanford ~ 2130 mthm

Idaho ~ 280 mthm

Fort St. Vrain, CO ~ 15 mthm

Savannah River Site ~ 30 mthm
Transuranic (TRU) waste disposition

Hanford Site
Idaho National Laboratory
Materials Fuels Complex
Argonne National Laboratory - East
Western Area Energy Technology Center
KAPL Nuclear Fuel Services
West Valley
Knolls Atomic Power Laboratory
Bettis Atomic Power Laboratory
Babcock & Wilcox NES
Savannah River Site
Los Alamos National Laboratory
Sandia National Laboratory
Waste Isolation Pilot Plant
Oak Ridge National Laboratory
Argonne National Laboratory
The WIPP Transportation System: Safest shipping containers on the road

Nuclear Regulatory Commission certified

“...The [WIPP transportation] system is safer than that employed for any other hazardous material in the U.S. ...”

National Academy of Sciences, WIPP Panel
National TRU Waste Program Status

• Safe TRU waste disposal for 14 years (March 1999)
• More than 11,000 shipments received at WIPP
• More than 13.5 million safe loaded miles traveled
• 22 sites cleaned up of legacy TRU waste
• More than 86,000 cubic meters of waste disposed
• FY14 Budget to maintain a capability of certifying, shipping, and receiving up to 17 shipments/week
• WIPP operational plans may be modified to support disposition of unique TRU streams.
TRU Shipments Summary

Shipments received at WIPP as of April 29, 2013: 11,244

Contact-handled: 10,594
Remote-handled: 650

Total Shipments Received by Calendar Year
(Including intersite shipments)

<table>
<thead>
<tr>
<th>Year</th>
<th>CH TRU waste shipments only</th>
<th>CH and RH TRU waste shipments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>44</td>
<td>44</td>
</tr>
<tr>
<td>2000</td>
<td>84</td>
<td>84</td>
</tr>
<tr>
<td>2001</td>
<td>366</td>
<td>366</td>
</tr>
<tr>
<td>2002</td>
<td>947</td>
<td>947</td>
</tr>
<tr>
<td>2003</td>
<td>818</td>
<td>818</td>
</tr>
<tr>
<td>2004</td>
<td>1,002</td>
<td>1,002</td>
</tr>
<tr>
<td>2005</td>
<td>988</td>
<td>988</td>
</tr>
<tr>
<td>2006</td>
<td>1,144</td>
<td>1,144</td>
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<tr>
<td>2007</td>
<td>997</td>
<td>997</td>
</tr>
<tr>
<td>2008</td>
<td>730</td>
<td>730</td>
</tr>
<tr>
<td>2009</td>
<td>1,032</td>
<td>1,032</td>
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<tr>
<td>2010</td>
<td>1,194</td>
<td>1,194</td>
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<tr>
<td>2011</td>
<td>1,218</td>
<td>1,218</td>
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<tr>
<td>2012</td>
<td>1,073</td>
<td>1,073</td>
</tr>
<tr>
<td>2013</td>
<td>846</td>
<td>846</td>
</tr>
</tbody>
</table>
PE-Ci per cubic meter emplaced

Plutonium Equivalent curies (PE-Ci) per cubic meter by calendar year

What this trend shows is we are more efficiently disposing of greater curies and, therefore, reducing risks sooner.

Higher in 2011 and 2012 than in recent years

Complex-wide LLW/MLLW Disposal Forecasts: Continued Downward Trend

- **OnSite**
- **Commercial**
- **NNSS**
- **TBD**

FY11 Actual, FY12 Actual, FY13, FY14, FY15

(millions of cubic feet)
LLW/MLLW Disposition Options

- **EnergySolutions (Utah)**
  - Accept Class A LLW and MLLW; 11e(2); NORM
  - Offers rail access, onsite treatment, and favorable bulk waste handling and disposal

- **Waste Control Specialists LLC (Andrews County, Texas)**
  - Multiple disposal facilities/licenses
    - Hazardous/exempt; 11e(2); NORM
    - Texas Compact Class A, B and C LLW – non-DOE waste
    - Federal Waste Facility Class A, B, and C LLW/MLLW – DOE waste
Current “Hot Topics” in EM

- Construction of the Waste Treatment Plant at ORP
- Construction of Salt Waste Processing Facility at Savannah River
- Treatment of Sodium Bearing Wastes in Idaho
- Suspected leaking tanks at ORP
- Surplus plutonium disposition
- Impact of delays in availability of a HLW repository on EM inventories
- Spent nuclear fuel processing?
- Mission of WIPP
- Construction of new on-site disposal facilities

- Challenging waste stream disposition
  - Depleted uranium
  - Uranium 233
  - Wastes incidental to reprocessing
- Scrap metals and contaminated nickel disposition
- Greater Than Class C LLW Disposal Environmental Impact Statement
- Mercury Storage Supplemen tal Environmental Impact Statement
- Revision to DOE Order 435.1, *Radioactive Waste Management*
- *Risk Informed Decision Making*
Risk-informed Decision Making

- Manage environmental contamination and waste in a manner that optimizes, balances protection of human health and the environment and cost effectiveness for current and future generations

- Will be necessary to leave residual waste in place
  - Allows for natural attenuation
  - Integrates stewardship into holistic, life-cycle management options
  - Requires further development of predictive modeling and visualization, and monitoring and sensor technologies
  - Recognizes U.S. Government’s long term commitment to monitoring and other institutional controls

Savannah River Tank 5 Heel Removal (Tank Interior)

Natural attenuation of uranium contamination 300 area, Hanford Site
EM’s success hinges on its collaboration with affected state, local, tribal governments, and local citizen groups.

EM supports national intergovernmental organizations and citizen groups through grants and cooperative agreements.

Bases for EM processes include:
- Early public and tribal involvement
- Communication
- Coordination among multiple regulators
- Transparency and confidence in risk ranking methodology
- Enhance involvement in EM and regulatory decisions
Core Value: Lessons Learned & Continuous Improvement

- Based on successes at Rocky Flats, Fernald, Mound, and other DOE sites, EM has developed Lessons Learned. These lessons are continuing to be applied to ongoing EM cleanup effort.

- Over the years, EM program has solved many cleanup problems that one time seemed unsolvable. Lessons Learned from these and other EM efforts can be used to address decommissioning and remediation issues all over the world.

- EM lessons learned can be accessed at
  http://www.hss.doe.gov/sesa/analysis/ll/links.html
  http://rockyflats.apps.em.doe.gov/

TMI Fuel Storage Facility at Idaho  Chernobyl Nuclear Reactor after the disaster  Fukushima Reactors damage due to 2011 tsunami
The World is Watching: EM International Efforts

United Kingdom
- National Nuclear Laboratory (NNL)
- Sellafield
- SOI between UK NDA and DOE for Exchange of Information Concerning Management of Radioactive Waste
- UK Health and Safety Executive (HSE-ONR)

Russia
- SOI between Rosatom and DOE concerning collaboration in innovative technologies for environmental restoration and radioactive waste management
- Khlopin Radium Institute (KRI)
- SIA Radon Institute
- Nuclear Safety Institute
- Russian Academy of Sciences (RAS)
- St. Petersburg Electrotechnical University (ETU) ‘LETI’ AtomEco Conference

Canada
- Atomic Energy of Canada Ltd. (AECL)

France
- DOE-CEA Agreement for Cooperation in Low-Carbon Energy Technologies
- AREVA
- MOU between ANDRA and DOE concerning cooperation in the field of radioactive waste management
- ICEM Conference 2011

Argentina
- US-Argentina Joint Standing Committee Meetings on Nuclear Energy Cooperation (JSCNEC)

Sweden
- SKB, Swedish Nuclear Fuel and Waste Management Company

Ukraine
- International Radioecology Laboratory (IRL)

Hungary
- MOU with Public Limited Co. for Radioactive Waste Management (PURAM)

Eastern Europe

International Multilateral Organizations
- International Atomic Energy Agency (IAEA)
- The Organization for Economic Co-operation and Development / Nuclear Energy Agency (OECD/NEA)
- International Framework for Nuclear Energy Cooperation (IFNEC)
- International Decommissioning Network (IDN)

South Korea
- Nuclear Engineering and Technology Institute (NETEC)
- US-Korea Joint Standing Committee Meetings on Nuclear Energy Cooperation (JSCNEC)

Japan
- US-Japan Nuclear Energy Action Plan (JNEAP)
- U.S.-Japan Science Mission
- Fukushima workshops
- Bilateral Commission on Civil Nuclear Energy Cooperation

International Efforts in other countries

Canada
- Atomic Energy of Canada Ltd. (AECL)

France
- DOE-CEA Agreement for Cooperation in Low-Carbon Energy Technologies
- AREVA
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Sweden
- SKB, Swedish Nuclear Fuel and Waste Management Company

Ukraine
- International Radioecology Laboratory (IRL)

Hungary
- MOU with Public Limited Co. for Radioactive Waste Management (PURAM)

Eastern Europe

International Multilateral Organizations
- International Atomic Energy Agency (IAEA)
- The Organization for Economic Co-operation and Development / Nuclear Energy Agency (OECD/NEA)
- International Framework for Nuclear Energy Cooperation (IFNEC)
- International Decommissioning Network (IDN)

South Korea
- Nuclear Engineering and Technology Institute (NETEC)
- US-Korea Joint Standing Committee Meetings on Nuclear Energy Cooperation (JSCNEC)

Japan
- US-Japan Nuclear Energy Action Plan (JNEAP)
- U.S.-Japan Science Mission
- Fukushima workshops
- Bilateral Commission on Civil Nuclear Energy Cooperation

International Efforts in other countries

Canada
- Atomic Energy of Canada Ltd. (AECL)

France
- DOE-CEA Agreement for Cooperation in Low-Carbon Energy Technologies
- AREVA
- MOU between ANDRA and DOE concerning cooperation in the field of radioactive waste management
- ICEM Conference 2011

Argentina
- US-Argentina Joint Standing Committee Meetings on Nuclear Energy Cooperation (JSCNEC)

Sweden
- SKB, Swedish Nuclear Fuel and Waste Management Company

Ukraine
- International Radioecology Laboratory (IRL)

Hungary
- MOU with Public Limited Co. for Radioactive Waste Management (PURAM)

Eastern Europe

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International Efforts in other countries
EM reduces risks and protect our workers, our communities and the environment through our continued cleanup.

We have demonstrated value for the American Taxpayer by delivering significant progress in the past several years in reducing risks and the overall liability - but our work is not done.

Our work is urgent and essential to the health and economic vitality of our communities and the nation and positions our Sites for future missions.

Our mission is not discretionary - it is a congressional mandate to D&D uranium enrichment facilities and a federal obligation to address the cold war environmental legacy cleanup and honor our regulatory commitments.

Time is not on our side – costs and risks increase over time.

EM’s continued success is dependent upon an integrated, risk informed national program, which can only be sustained by support of regulators and stakeholders.