

SOUTHWEST RESEARCH AND INFORMATION CENTER
P.O. Box 4524 Albuquerque, NM 87196 505-262-1862 FAX: 505-262-1864 www.sric.org

**A PERSPECTIVE ON
WHAT'S WRONG WITH
AND THE FUTURE FOR THE
WASTE ISOLATION PILOT PLANT (WIPP)**

By

Don Hancock

Before the

**INTERIM RADIOACTIVE AND
HAZARDOUS MATERIALS COMMITTEE**

September 16, 2014

Carlsbad, NM

Summary

Southwest Research and Information Center (SRIC) believes that:

- the cause of the radiation release must be known,
- there must be certainty that another radiation release could not occur,
- the contamination in the underground and on the surface must be completely cleaned up, and
- workers who were contaminated must receive adequate evaluation and treatment by medical personnel specifically trained to evaluate and treat anyone with internal radiation exposure, and new worker and public protection measures must be put in place, as recommended by the New Mexico Medical Society (page 12).

The Department of Energy (DOE) and its Nuclear Waste Partnership LLC (NWP) contractor did not adequately protect the workers from smoke inhalation during the February 5 fire, including one worker that continues to be treated. DOE and NWP did not prevent the February 14 radiological event, nor detect the radiation release and promptly and correctly inform workers and the public of the event. Thus, DOE and NWP have not shown the capability of resolving those fundamental issues. Additional expertise and perspective is needed in an independent, technical, public investigation. More than 1,200 New Mexicans have signed petitions in support of such an investigation (page 11).

Among the current realities:

- Substantial contamination in the underground and exhaust shaft apparently cannot be completely decontaminated (pages 6-7),
- How much “derived waste” will be produced by decontamination efforts and where will it go are unknown,
- What amounts of contamination would remain and what are deemed acceptable exposures to workers from radioactivity and toxic chemicals have not been publicly discussed and established,
- The costs and schedules for the major activities of the “recovery” are unknown,
- The federal government DOE Environmental Management (EM) budget is flat or decreasing. Thus, any additional funds for WIPP recovery must come from other sites, with Los Alamos National Lab (LANL) a likely major target of funding reductions (page 8).
- WIPP’s existing funding should be scrutinized, including NWP and transportation contracts (pages 9 and 10).
- While many important facts are not known – especially related to the cause(s) and whether future events could be prevented – much information is being kept secret through DOE’s internal investigations.

Among the lessons learned from the February 2014 events:

- WIPP’s mining and nuclear safety cultures are broken,
- The declining safety culture was caused, in part, by DOE and NWP not focusing on safety and the WIPP mission, but rather putting significant management attention, expertise, and money into promoting mission expansion (pages 3 and 5).

WIPP's mission

As I discussed in my October 8, 2013 testimony to this Committee:

WIPP's mission is to demonstrate whether the federal government and its contractors, at the cost of billions of dollars, can:

- (1) safely operate WIPP to meet the facility's "start clean, stay clean" standard for up to 175,564 cubic meters (m³) of defense transuranic (TRU) waste, the legal capacity limit;
- (2) safely transport TRU waste through more than 20 states without serious accidents or release of radioactive or hazardous contaminants;
- (3) meet commitments, including timeframes, to clean up TRU waste at about 20 Department of Energy (DOE) nuclear weapons sites; and
- (4) safely close, decontaminate, and decommission the WIPP site, beginning in about 2030 or earlier.

No deep geologic repository has yet accomplished such a mission. The Germans put about 84,000 cubic meters of non-high-level commercial waste in two deep geologic repositories (Asse and Morsleben) between 1967 and 1998. But both of those facilities have failed and have been closed without completing their missions.

Even before the long-term shutdown caused by the February 5 fire and February 14 radiation release, it was clear that WIPP would not fully accomplish its mission. While 91,268 cubic meters of WIPP in more than 171,000 containers were emplaced in the WIPP underground by February 5, 2014, well under one percent of that volume was Remote-Handled (RH) TRU waste. The actual capacity would accommodate only about 45% of the RH legal limit, even if all the remaining canister space is used (page 4). In addition, there is not sufficient capacity for the legal limit of Contact-Handled (CH) TRU waste. Those capacity limitations now have been exacerbated by the loss of Panel 7 space as a result of the contamination and the need for the additional waste from decontamination activities.

DOE has been unwilling to engage in technical and public discussions about options for addressing those capacity issues. Some of its mission expansion proposals were predicated on there not being as much legacy TRU waste as the legal limit, so that "excess" capacity could be used for commercial TRU waste or surplus plutonium (page 5).

Those multiple efforts to expand WIPP distracted from the needed focus on safety culture and accomplishing the WIPP mission. The declining safety culture that the DOE Accident Investigation Board reports found led directly to the fire and radiation release. Those and any other expansion proposals must be ended if WIPP is to re-open and operate safely.

WIPP PERMITTED VS. ACTUAL CAPACITY

Chart 1

(in cubic meters) - As February 5, 2014

	<u>CH-Permitted</u>	<u>Actual</u>	<u>% Used</u>	<u>RH-Permitted</u>	<u>Actual</u>	<u>% Used</u>
Panel 1	18,000	10,497	58.32%	0		
Panel 2	18,000	17,998	99.99%	0		
Panel 3	18,750	17,092	91.16%	0		
Panel 4	18,750	14,258	76.04%	356	176	49.44%
Panel 5	18,750	15,927	84.94%	445	235	52.81%
Panel 6	18,750	14,468	77.16%	534	214	40.07%
Panel 7	18,750	387		650	16	
Panel 8	18,750			650		
Totals	148,500	90,627		2,635	641	
Panels 1-6	111,000	90,240	81.30%	1,335	625	46.82%
Panels 1-8**	148,500	127,740	86.02%	2,635	1,925	73.06%
Legal Capacity	168,485			7,079		
Panel 9*	18,750			650		
Panel 10*	18,750			650		
Panels 9-10***	186,000	165,240	98.07%	3,935	3,225	45.56%

Notes: *Panels 9 and 10 proposed capacities. ** If Panels 7-8 are filled to capacity.

***Total capacity if Panels 9 and 10 filled to proposed capacities.

"CH" is Contact-Handled waste; "RH" is Remote-Handled

"Permitted" refers to the capacity limits in the New Mexico WIPP permit

SOME WIPP EXPANSION PROPOSALS

1. Bring 10,000 metric tons of mercury for long-term storage on the surface at WIPP.

DOE's *Final Long-Term Management and Storage of Elemental Mercury Supplemental Environmental Impact Statement* (DOE/EIS-0423-S1), September 2013, includes an area within the WIPP site and two locations adjacent as reasonable alternatives to the Waste Control Specialists (WCS) preferred alternative site.

2. Rename high-level waste (HLW) in 11-20 tanks at Hanford (WA) and ship it to WIPP.

DOE's *Final Tank Closure and Waste Management Environmental Impact Statement for the Hanford Site, Richland Washington* (DOE/EIS-0391), November 2012, would rename HLW waste in up to 20 tanks as TRU and ship it to WIPP.

A similar proposal in 2003 resulted in WIPP Permit Section 2.3.3.8 that provides:

Excluded Waste

TRU mixed waste that has ever been managed as high-level waste and waste from tanks specified in Permit Attachment C are not acceptable at WIPP unless specifically approved through a Class 3 permit modification.

On April 8, 2013, WIPP submitted a class 2 permit modification request to the New Mexico Environment Department (NMED), despite strong public opposition and NMED's position that any such request would be a class 3 modification. More than a thousand commentors objected to the request and on July 2, 2013, NMED determined that it would be a class 3 request.

3. Bring commercial Greater-Than-Class C waste to WIPP in shielded containers.

DOE's *Draft Environmental Impact Statement for the Disposal of Greater-Than-Class C (GTCC) Low-Level Radioactive Waste and GTCC-Like Waste* (DOE/EIS-0375) and forthcoming, but long-delayed, Final EIS will include WIPP as a reasonable, and possibly preferred, alternative site.

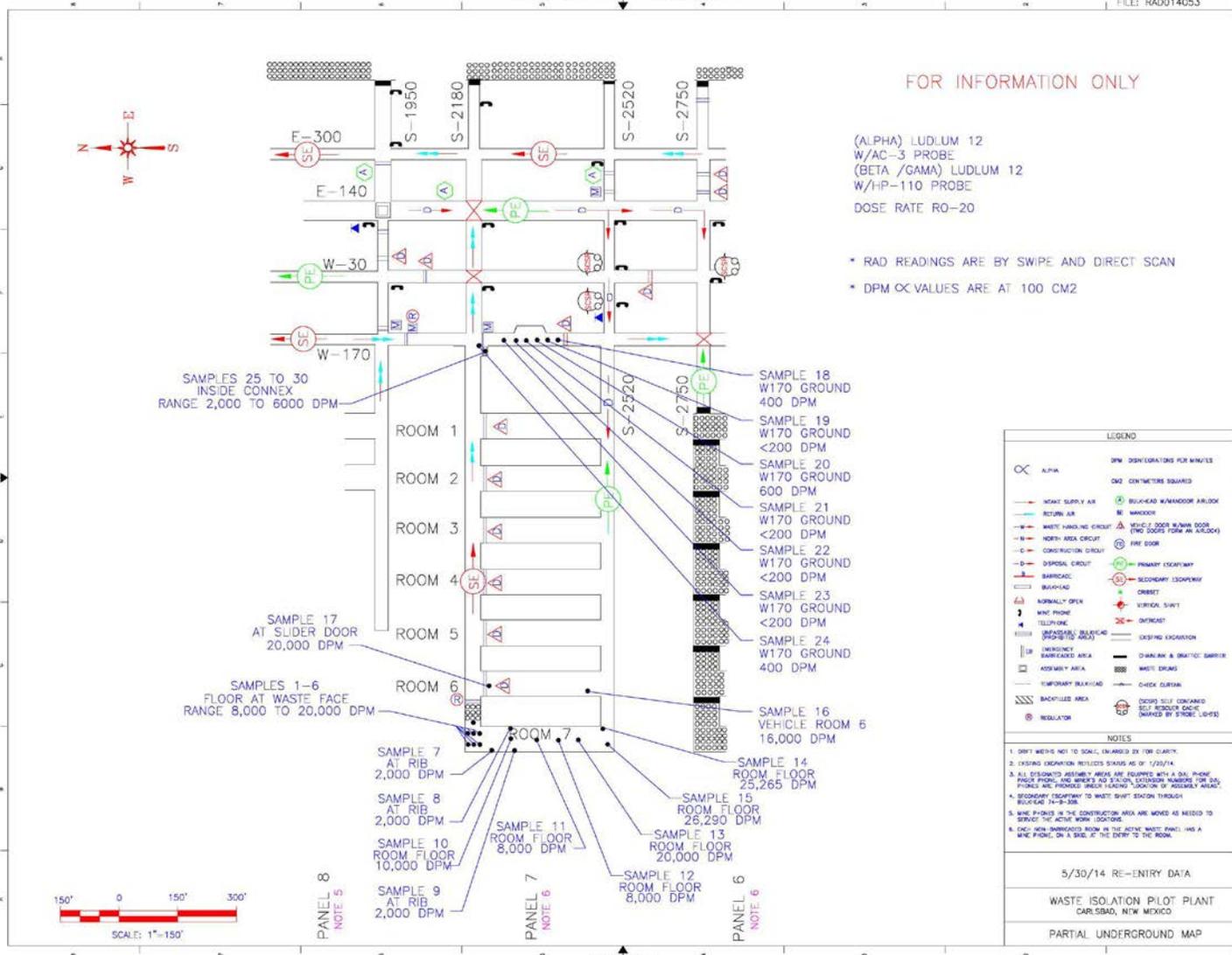
Any such proposal is contrary to WIPP authorizing legislation – PL 96-213(a) and the WIPP Land Withdrawal Act (PL 102-579, as amended by PL 104-201).

4. Bring plutonium that has never been in the planned WIPP inventory from Savannah River Site, even if it displaces waste from other site.

For the past 10 years, DOE has maintained that surplus plutonium would be used in Mixed Oxide (plutonium-uranium) fuel in nuclear power plants, despite the facts that no such fuel has ever been used and there are numerous technical problems. Although for almost 20 years, DOE had stated that WIPP was not suitable and did not have capacity for the plutonium, the 2012 *Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement* states that WIPP is now the preferred site for 6 metric tons of surplus plutonium.

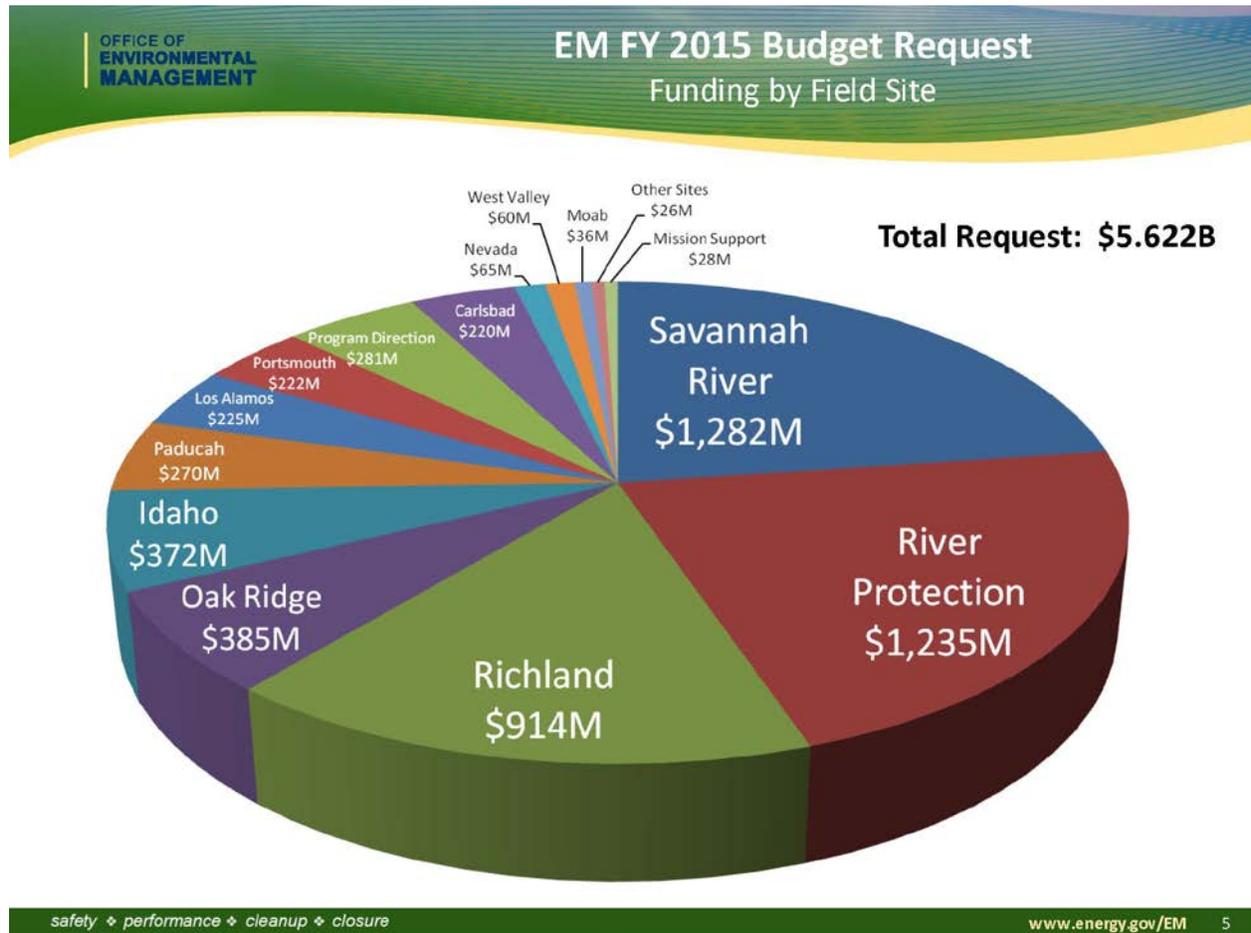
5. Conduct heater tests in the WIPP underground to show that it could handle HLW.

DOE's Salt Defense Disposal Investigations (SDDI) would place heaters in underground rooms to show that the site could handle highly radioactive waste, despite much scientific data in the U.S. and internationally that salt formations are not suitable for such "hot" waste.



Updated information from subsequent underground entries has not been made available. DOE officials have stated that the data are being held by the Accident Investigation Board.

DOE EM FISCAL YEAR 2015 BUDGET REQUEST



HOUSE ENERGY & WATER
 APPROPRIATIONS FOR FY 2015
 House Report 113-486 (June 20, 2014)
 Defense Environmental Cleanup (\$4,801M)

SENATE ENERGY & WATER
 APPROPRIATIONS FOR FY 2015
 Senate Draft Report (July 24, 2014 posted)
 Defense Environmental Cleanup (\$5,101M)

<u>Site or Program</u>	<u>House</u>	<u>Senate</u>
Hanford/River Protection	\$2,085M	\$2,176M
Savannah River	\$1,105M	\$1,150M
Oak Ridge	\$ 213M	\$ 229M
Idaho	\$ 380M	\$ 367M
Los Alamos	\$ 180M	\$ 225M
Program Direction	\$ 281M	\$ 281M
Carlsbad	\$ 236M	\$ 318M
(+ up to \$120M transfer from NNSA pension contributions)		

**WIPP BUDGET REQUESTS, APPROPRIATIONS,
DISPOSAL – FY 1998 - 2014**

Chart 2

	<u>DOE REQUEST</u> <u>(in \$000)</u>	<u>APPROPRIATION</u> <u>(in \$000)</u>	<u>% of</u> <u>Request</u>	<u>ARRA</u> <u>(in \$000)</u>	<u>DISPOSAL</u> <u>(cubic meters)</u>
FY2014	\$203,390	\$216,193	106.29%		2,364
FY2013	\$198,100	\$202,293	102.12%		5,117
FY2012	\$220,161	\$215,134	97.72%		5,701
FY2011	\$220,245	\$220,006	99.89%	\$64,091	7,314
FY2010	\$220,340	\$234,981	106.64%	\$86,608	7,822
FY2009	\$211,524	\$231,661	109.52%	\$21,676	6,175
FY2008	\$219,739	\$234,585	106.76%		5,944
FY2007	\$213,278	\$228,818	107.29%		8,549
FY2006	\$212,629	\$228,331	107.38%		10,556
FY2005	\$231,612	\$229,444	99.06%		7,657
FY2004	\$214,207	\$223,056	104.13%		8,810
FY2003	\$193,228	\$209,734	108.54%		7,542
FY2002	\$164,570	\$183,437	111.46%		5,134
FY2001	\$194,498	\$197,886	101.74%		1,965
FY2000	\$186,404	\$178,975	96.01%		352
FY1999	\$183,591	\$185,405	100.99%		266
FY1998	\$162,885	\$173,700	106.64%		0
Totals	\$3,450,401	\$3,593,639	104.15%	\$172,375	91,268

“ARRA” is American Recovery and Reinvestment Act.

SOURCES: Presidential Budget Requests to Congress, WIPP Waste Data System.

WIPP CONTRACTORS

Management & Operations – Nuclear Waste Partnership LLC (NWP)

“The contractor shall, in accordance with the terms of this contract, provide the personnel, equipment, materials, supplies, and services (except as may be furnished by the Government) and otherwise do all things necessary for, or incident to, providing its best efforts so as to carry out in an efficient and effective manner all necessary and related services to manage and operate the Waste Isolation Pilot Plant (WIPP)....” Contract DE-EM0001971, Section B.1.

Term: October 1, 2012 – September 30, 2017

Additional Option Period: October 1, 2017 – September 30, 2022

Anticipated Funding: ~\$133 million per year

NWP

“URS Energy and Construction, Inc. (URS) and Babcock & Wilcox Technical Services Group, Inc. (B&W) have formed Nuclear Waste Partnership LLC (NWP) to support EM and Carlsbad Field Office (CBFO) in achieving WIPP and National TRU Waste Program (NTP) goals....The NWP team includes major subcontractor AREVA Federal Services, LLC (AREVA) to provide best-in-industry TRU waste characterization expertise, services, equipment, and our protege, VJ Technologies (VJT), a leader in real-time radiography (RTR) technology and application.”

<http://www.nwp-wipp.com/partners.html>

URS – Major Contractor at DOE sites, including Hanford, Savannah River, and WIPP.

B&W – Major Contractor at DOE sites, including Oak Ridge, Savannah River, Idaho National Lab, Los Alamos, Livermore, and Bettis.

AREVA – “AREVA shareholding structure is particularly stable. The French State controls directly or indirectly 86,52% of AREVA's capital. The main shareholder is a public organization, the CEA (Commissariat à l'Energie Atomique et aux énergies alternatives). The BPI-Groupe (Banque Publique d'Investissement) represents also a public shareholder of the company.”

<http://areva.com/EN/finance-1166/shareholding-structure-of-the-world-leader-in-the-nuclear-industry-and-major-player-in-bioenergies.html>

Transportation – CAST and Visionary Solutions

CAST Specialty Transportation, Inc.

Term: January 2012 – January 2017 (includes annual options)

Firm Fixed Price Funding: January 2014 – January 2015 - ~\$6.1 million + Options

Visionary Solutions

Term: July 28, 2012 – July 27, 2017 (includes annual options)

Firm Fixed Price Funding: July 2013 – July 2014 - \$6.175 million + Options

Reduced Funding: July 2014- July 2015 – Amount not made public

INDEPENDENT INVESTIGATION REQUIREMENTS

Who: Technical experts from New Mexico and other states with diverse expertise in fields including: earth sciences, engineering, environmental remediation, public policy, health and medicine. The experts should not have a material financial interest in the DOE or U.S. nuclear weapons and waste facilities. All institutions and experts should fully disclose past and present relationships with DOE or its contractors.

What: Scope of work would include: identifying the cause(s) of the radiation release, promoting measures to prevent future releases, determining the extent of the underground contamination, examining underground decontamination options, understanding the extent of worker exposure, describing occupational exposure limits during recovery and re-opening, discussing recovery options, improvements needed in radiation detection systems, safety culture improvements, and impacts on public confidence.

How: Extensive data review; interviews with DOE, contractor, and independent officials who cooperate fully; technical and public meetings; and a final report.

More than 1,200 people have signed petitions for an Independent Investigation, stating: “The investigation should include technical experts and the public and determine the cause of the release, whether future releases will be prevented, options for decontamination of the underground and surface, and medical treatment needs of contaminated workers.”

**NEW MEXICO MEDICAL SOCIETY RESOLUTION B-201 - WIPP RADIATION
RELEASE REQUIRES NEW PUBLIC HEALTH POLICY**

Adopted on May 10, 2014 at the NMMS Annual Meeting

Whereas, the Waste Isolation Pilot Plant (WIPP) located near Carlsbad, New Mexico, is both a national and state facility that stores transuranic nuclear waste in special containers placed in underground salt caverns, and has been in full operation since March, 1999; and

Whereas, transuranic waste stored at WIPP includes plutonium and americium and other highly hazardous substances that remain radioactive for thousands of years, and any workers at WIPP or members of the general public exposed to radiation released by these materials are at risk for potentially significant health consequences including malignancies; and

Whereas, the recent radiation release event (the cause of which is still not determined) that occurred on February 14, 2014 at WIPP has now been documented as having exposed at least 21 workers to radiation, but those workers were not provided with evaluation and treatment by medical professionals trained in treating internal radiation exposure; and

Whereas, workers at WIPP who will go into the radiation contaminated underground do not have the benefit of independently established and enforced evidence-based radiation protection standards; and

Whereas, there is no current state policy that requires availability in New Mexico of Diethylenetriaminepentaacetic acid (DTPA), recognized as a very stable chelating agent with a long shelf life that accelerates the excretion of plutonium in early treatment after an accident, and which would be much less effective if it had to be obtained from an outside facility such as Oak Ridge; therefore be it

RESOLVED that New Mexico Medical Society adopt as policy that medical preparedness for dealing with radiation release events or exposures at the Waste Isolation Pilot Plant be considered a matter of public health; and be it further

RESOLVED that New Mexico Medical Society work with the New Mexico Environment Department and the New Mexico Department of Health to develop and implement new policies for protection of workers at the Waste Isolation Pilot Plant (WIPP) and protection of the general public, including:

- a. Appropriate initial and recurrent education and training of medical personnel who may be asked to perform medical evaluations and provide treatment to people exposed to radiation released by materials at WIPP,
- b. Requirement for education of WIPP personnel in the health risks of radiation exposure,
- c. Training of WIPP personnel in, and enforcement of, the appropriate use of evidence-based radiation protection equipment by workers at WIPP,
- d. Requirement that appropriate emergency therapeutic agents be available for timely administration near at-risk sites, and
- e. In the event of a container breach that exposes radioactive substances underground at WIPP or causes the venting of radioactive gas into the general environment, that evaluation and treatment of potentially exposed individuals by qualified and trained medical personnel be immediately offered at no cost.