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# Mercury in the Environment

- Although mercury is a naturally occurring metal, it is a neurotoxin that easily penetrates the brain and central nervous system.
- It can also become toxic when biochemical processes transform it into methylmercury. Methylmercury builds up in the food chain, accumulating in muscle tissue and putting people and wildlife at risk.
- High levels of mercury are linked to birth defects and death in birds and fish. In humans, too much mercury can cause brain and nervous system damage. And lower exposures can cause nausea, muscle weakness and memory loss.

# Human Exposure

- The most common pathway to human exposure is consumption of contaminated food; most typically this contamination occurs in ocean fish.
- The State has issued consumption advisories for fish caught in two streams in eastern Utah and one reservoir in the southwestern corner of the state.
- The State also declared that two species of ducks should not be eaten because of high mercury,

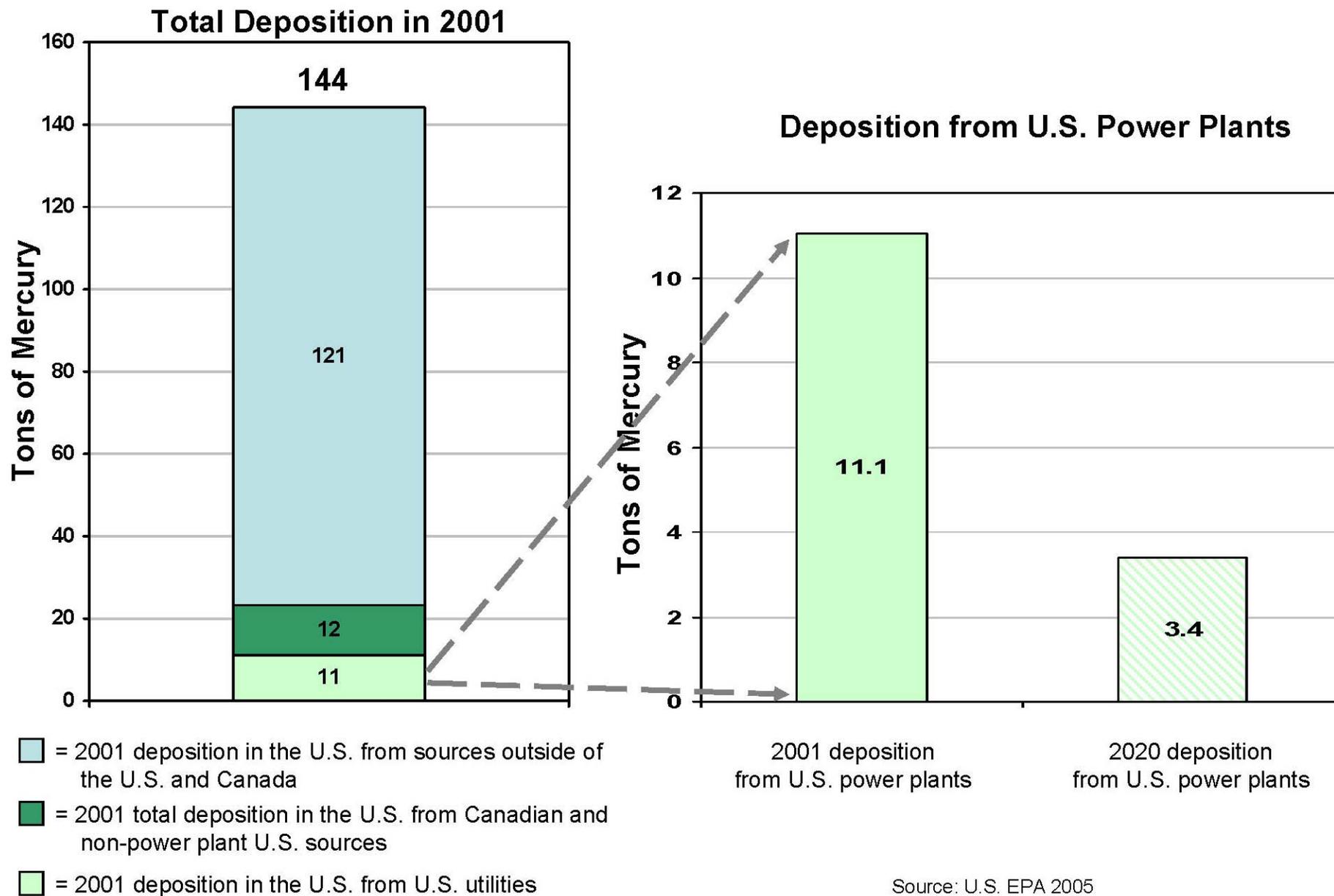
# Mercury in Utah

- The Great Salt Lake's mercury levels - especially its methylmercury levels – are extraordinarily high, but no one is sure why or how it cycles in the system.
- There is some evidence that Nevada gold mines have contributed to the mercury found in Utah.
- A Statewide Mercury Work Group has been organized to look for answers. Its 15 members - who come from industry, government and advocacy groups - are setting priorities on the research that needs to be done. John Whitehead, assistant director of the state Division of Water Quality, heads the task force.

# Inventory of Air Emissions

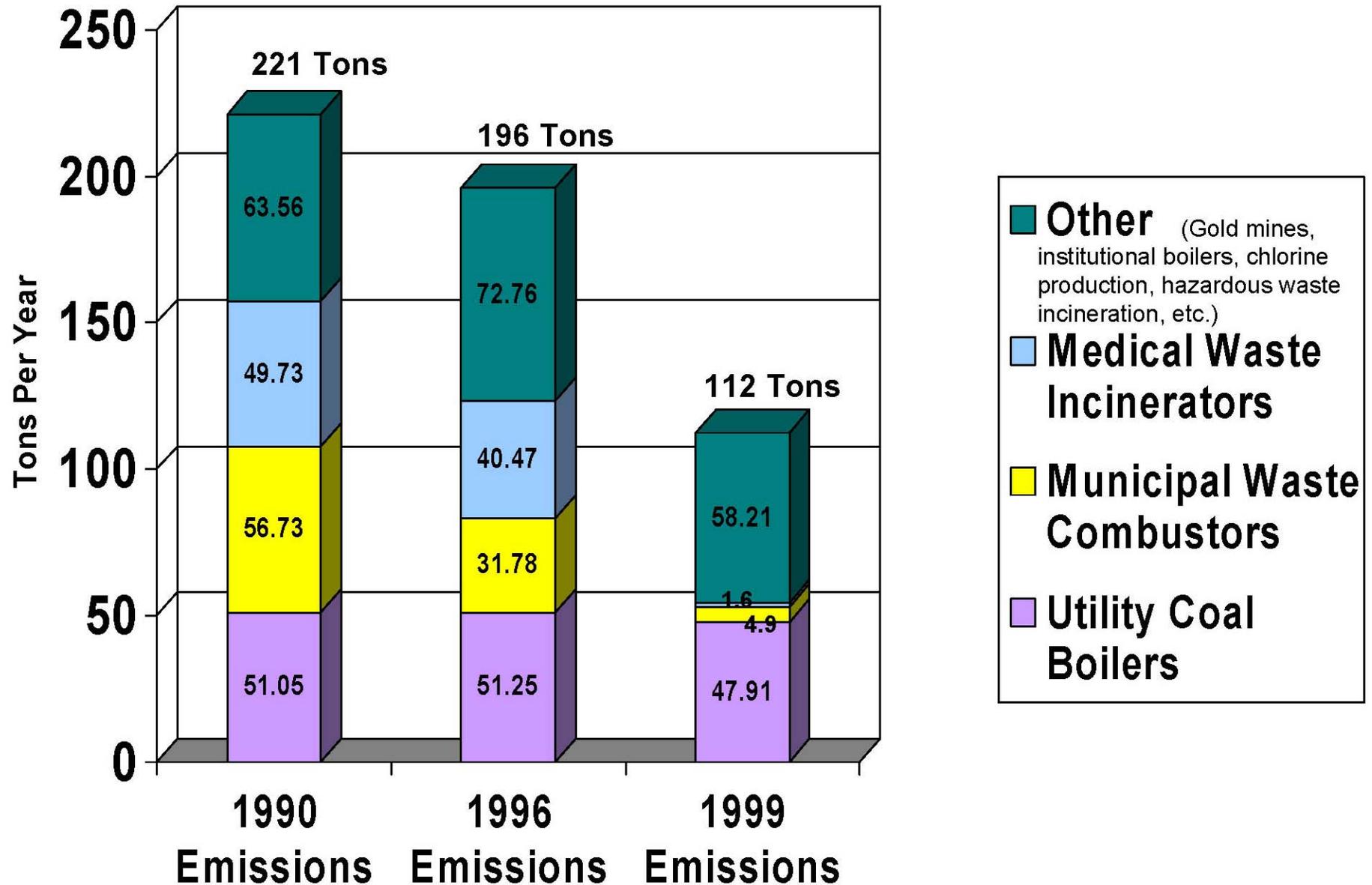
- Hg emissions are a global problem. Much of the global contamination ends up in the oceans, where it finds its way into the food chain.
- The US presently accounts for only 3% of global Hg emissions.
- Of the total Hg deposition in the US in 2001, 84% was due to sources outside of the US and Canada.
- Coal fired power plants are the largest remaining source of Hg emissions in the US. Other sources include gold mines, municipal waste incinerators, medical waste incinerators, salvage operations (Hg switches in cars).

# Mercury Deposition in the U.S.



Source: U.S. EPA 2005

# Mercury Emissions Have Dropped 45% Since 1990



Source: EPA

<b>1999 Mercury Emissions</b>			
		<b>tons/yr</b>	<b>lbs/yr</b>
Intermountain Power Service Corporation	Intermountain Generation Station	0.062	123.4
PacifiCorp	Carbon Power Plant	0.023	46.0
PacifiCorp	Gadsby Power Plant	0.001	1.0
PacifiCorp	Hunter Power Plant	0.175	350.7
PacifiCorp	Huntington Power Plant	0.123	245.3
PacifiCorp	Little Mountain Power Plant	0.000	0.3
Sunnyside Cogeneration Associates	Sunnyside Cogeneration Facility	0.010	19.9
<b>EGU Subtotal:</b>		<b>0.393</b>	<b>786.6</b>
Wasatch Integrated Waste Mgt District	County Landfill & Energy Recovery Facility (DCERF)	0.090	179.0
Clean Harbors Aragonite LLC	Hazardous Waste Storage/Incineration	0.061	121.0
Bountiful City Corporation	Bountiful Sanitary Landfill	0.009	17.8
Trans-Jordan Cities	Trans-Jordan Landfill	0.000	0.1
<b>Subtotal:</b>		<b>0.159</b>	<b>317.9</b>
Nucor Steel	Nucor Steel	<b>0.067</b>	<b>133.9</b>
Holcim (US) Inc.	Devil's Slide Plant	0.034	67.1
Ash Grove Cement Company	Learnington Cement Plant	0.009	18.9
Kennecott Utah Copper Corporation	Power Plant/ Lab/ Tailings Impoundment	0.031	62.3
Kennecott Utah Copper Corporation	Smelter & Refinery	0.005	10.0
Kennecott Barney's Canyon Mining Company	Barney's Canyon Mine	0.000	0.5
Chevron Products Co - SL Refinery	Salt Lake Refinery	0.001	1.0
Flying J Incorporated	Flying J Refinery (Big West Oil Co.)	0.000	0.0
Tesoro West Coast	Salt Lake City Refinery	0.001	1.7
ATK Thiokol Propulsion	Promontory Plant	0.001	1.1
Deseret Chemical Depot	Deseret Chemical Depot (South Area)	0.001	1.1
Graymont Western US Incorporated	Cricket Mountain Plant	0.004	8.9
Other	Other (Combined < 1 lb/yr)	0.001	2.3
University of Utah	University of Utah facilities	0.000	0.7
Dugway Proving Ground	U.S. Army-Dugway Proving Ground	0.000	0.7
Nephi Rubber Products Incorporated	Rubber Hose Manufacturing Facility	0.000	0.4
Hill Air Force Base	Main Base	0.000	0.3
Staker & Parson Companies	Brigham City Operations	0.000	0.1
Jack B. Parsons Company	Smithfield Cedarapids 29,013 Asphalt Hot Plant	0.000	0.0
KC Asphalt LLC	North Salt Lake Asphalt Terminal	0.000	0.0
Hill Air Force Base	Utah Test and Training Range	0.000	0.0
Citation Oil and Gas Company	Pineview Gas Plant	0.000	0.0
United States Gypsum Company	Sigurd Plant	0.000	0.0
Hales Sand and Gravel Incorporated	BMG Drum Mix Asphalt Plant	0.000	0.0
	<b>Total</b>	<b>0.622</b>	<b>1,243.9</b>

# Clean Air Mercury Rule (CAMR)

- In order to address Hg emissions from coal-fired power plants, EPA on May 18, 2005, issued the Clean Air Mercury Rule (CAMR).

# General Facts About CAMR

- It targets Coal-Fired Electrical Generating Units that are 25 MW or larger
- It sets nation-wide caps:
  - 38 tons/yr in 2010 and
  - 15 tons/yr in 2018 and beyond
  - Compares with 48 tons in 1999
- Each State has been allocated a cap total for each phase of the program
- A market trading program will ensure cost-effectiveness.

# General Facts (contd.)

- Phase-1 caps are based on existing control technology for particulates, SO<sub>2</sub>, and NO<sub>x</sub>.
- Phase-1 also anticipates the further application of these types of controls to eastern sources that must comply with the Clean Air Interstate Rule (CAIR). Mercury reductions under Phase-1 are considered as a co-benefit of the CAIR program.
- Even in Phase-2, most of the actual reductions will occur in the East, where the coal that is burned is generally of bituminous rank.

# General Facts (contd.)

- Utah's allowances are:
  - 0.506 tons/yr for 2010-2017 and
  - 0.200 tons/yr for 2018 and beyond
  - This compares with an estimate of 0.142 tons emitted in 1999.
- Any additional generating capacity will have to fit within these caps.
- The Ute Indian Tribe, which has jurisdiction over the Bonanza Power Plant, was allocated 0.060 tons/yr for 2010-2017 and 0.024 tons/yr for 2018 and beyond (there was no estimate provided for 1999).

# General Facts (contd.)

- All states and tribes will need to submit plans to implement the rule by November 17, 2006.
- Sources will need to begin monitoring by January 1, 2009.
- Actual Compliance begins in 2010.

# General Facts (contd.)

- EPA moved Hg control at EGUs from Section 112 of the Clean Air Act (Part 63, National Emission Standards for Hazardous Air Pollutants) to Section 111 (Part 60 – New Source Performance Standards).
- Within the NSPS (Part 60), the CAMR has:
  - amended Subpart Da by adding Hg limits for new facilities
  - and created a new Subpart HHHH to address Hg requirements for existing coal-fired EGUs.

# General Facts (contd.)

- Permits Regulation (Part 72) and Continuous Emission Monitoring (Part 75) were amended to include Hg in the requirements for continuous emissions monitoring and to include a provision for the use of a sorbent trap monitoring system.
- Sources subject to the CAMR that are also “Part 70 Sources” will need to obtain an addendum to their Operating Permits as part of this rule.
- There is also a new Standard Test Method for measuring elemental, oxidized, particle-bound, and total mercury in flue gas. This is called the Ontario-Hydro Method.

# Responsibilities under the CAMR

## Permitting Authority:

- Apply NSPS Subpart Da Hg standards to any applicable Energy Generation Units (EGUs) commencing construction after 1/30/04.
- Submit State Plan, under 40 CFR 60 Subpart B, to comply with the state-wide Hg budget caps (11/17/06)
- Distribute “old-unit Hg allowances” to affected units
- Report allowance distributions to the Administrator

# Responsibilities under the CAMR

## Permitting Authority:

- Establish compliance dates for Hg monitoring, as per Part 75 Subpart I (“Hg Mass Emission Provisions”)
- Issue T5 Hg budget permits for pre-existing units (permit applications are due 7/1/08)
- Issue written notice of approval/disapproval regarding initial certification of Hg monitoring systems

# Responsibilities under the CAMR

## Owner/Operator:

- Name Designated Representative, and submit a complete certificate of representation (prior to 12/1/06)
- Submit a Title V Hg budget permit application (7/1/08 for pre-existing sources)
- Submit a unit-specific Monitoring Plan in accordance with Part 75

# Responsibilities under the CAMR

## Owner/Operator:

- Conduct initial certification of required monitoring systems for Hg mass emissions and unit heat input values
- Begin continuous monitoring / recordkeeping / reporting (1/1/09)
- Submit Quarterly Reports in electronic form as prescribed by the Administrator... (mid 2009)
- If applicable, request from the Permitting Authority by July 1 an allocation from the new unit set-aside
- Request (of the Administrator) any allowance transfers

# Responsibilities under the CAMR Administrator:

- Establish Hg budget accounts (upon receipt of complete certificate of representation)
- Record allowances, as submitted by Permitting Authority, in budget accounts (12/1/06, 08, 10, and each year thereafter)
- Deduct allowances from Hg compliance accounts for prior control period (sometime after the allowance transfer deadline... generally 3/1 of the year following the control period; would begin in 2011)
- Record allowances, as submitted by Permitting Authority for the 6th yr after..., in budget accounts (2011 and every year thereafter; date not specified, but must follow the allowance transfer date; generally 3/1)
- Authorize any allowance transfers

# Application to Utah State Budget Allocations

- Each State has been allocated a cap total for each phase of the program. A market trading program will ensure cost-effectiveness.
- Utah's allowances are:
  - 0.506 tons/yr for 2010-2017
  - 0.200 tons/yr for 2018 and beyond
  - This compares with an estimate of 0.142 tons emitted in 1999
- Any additional generating capacity will have to fit within these caps.

# Application to Utah Designated Facilities Plan

- To address existing EGUs that would have been subject to the New Source Performance Standard had they been constructed after the effective date, the State will need to develop what is called a “Designated Facilities Plan” (by November 17, 2006.)
- It must address the following requirements:
  - show compliance with the State’s annual budget caps, based on either an allowance system or on prescribed allowable emission rates
  - requires EGUs to comply with the monitoring/recordkeeping/reporting requirements of part 75
  - demonstrates legal authority to adopt and require the above

# Application to Utah Compliance Options

- The CAMR contains an allowance system with schedules necessary to show compliance with the State's annual Hg budget caps. If adopted by the State, it would automatically satisfy the compliance element of the Designated Facilities Plan.
- In addition to the requirements of a national trading program as envisioned by the CAMR, Utah, like several other states, is considering more restrictive limits on Hg emissions at EGUs.

# Decisions to be Made:

- Whether to be more restrictive than the national trading program
- If so, then by what means?
  - NSPS limits?
  - BACT limits?
  - STAPPA/ALAPCO Rule (80% in 2008 / 90% in 2012)?
  - State-wide cap?
- Whether to participate at all in the national trading program
  - affects room for additional generating capacity
- ...all topics for this workgroup

# Allowance Allocations

- EPA's model rule (NSPS Subpart HHHH) includes a proposed method of allowance distribution:
  - based on heat input
  - includes 5% set-aside for new units in Phase 1
  - includes 3% set-aside for new units in Phase 2
- However, EPA invites states and tribes to develop their own schemes
- Given that Utah has been allocated more allowances than the emissions that have historically come from its EGUs, there will be some concern about any “surplus” allowances. The workgroup should also keep this in mind.

# Tribal Issues

- The Ute Indian Tribe, which has jurisdiction over the Bonanza Power Plant, was allocated:
  - 0.060 tons/yr for 2010-2017 and
  - 0.024 tons/yr for 2018 and beyond
  - There was no estimate provided for 1999
- All states and tribes will need to submit plans to implement the rule by November 17, 2006.
- Non-submittal results in automatic participation in the national trading program (same as for states.)

# Rule Development

## Timing Issues:

- All states and tribes will need to submit Designated Facilities Plans to implement the rule by November 17, 2006.
- There will also be rulemaking actions to support the Designated Facilities Plans.
  - To meet the deadline, we would target the June meeting of the UAQB as the opportunity to release a proposal for public comment.
  - This schedule would then allow a period of July – September for subsequent revision and finalization (for the October UAQB meeting)
- Depending on the ultimate compliance method, rulemaking could proceed on separate tracks.

# Rule Development

Players:

- Is there anybody we missed?

# Process

- At this point UDAQ could draft a proposal, at least in concept, and then distribute for comments.
- Would it be more productive to hear everyone's preferences first? If so, let's maybe set a date.
- It may be helpful to identify some areas of particular interest... for example:
  - determination of actual baseline emissions (1999)
  - allowance allocation methodology
  - surplus allowances
  - compliance options
  - any others?
- Webpage at DAQ for communication
- Meetings as necessary