

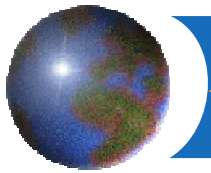


EPA's Climate Protection Workshop for the Magnesium Industry

Kirsten Cappel
U.S. Environmental Protection Agency
cappel.kirsten@epa.gov

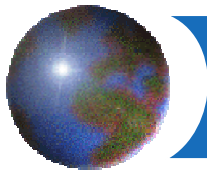
66th Annual World Magnesium Conference
May 31- June 2, 2009
San Francisco, CA





Presentation Overview

- Current Policy Developments Impacting the Future
 - Proposed Mandatory GHG Reporting Rule
 - Congressional Activity - Waxman-Markey
 - EPA/DOT Proposed Standards
- EPA's SF₆ Emission Reduction Partnership for the Magnesium Industry
- Conclusions and Looking Forward



Mandatory GHG Reporting Rule

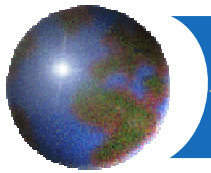
Appropriations Language

FY08 Omnibus Appropriations, signed Dec 26, 2007:

- “... not less than \$3,500,000 shall be provided for activities to develop and publish a draft rule not later than 9 months after the date of enactment of this Act, and a final rule not later than 18 months after the date of enactment of this Act, to require mandatory reporting of greenhouse gas emissions above appropriate thresholds in all sectors of the economy...”

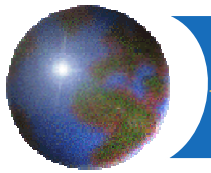
Accompanying Explanatory Statement

- The Agency shall "use its existing authority under the Clean Air Act" to develop a mandatory GHG reporting rule. "The Agency is further directed to include in its rule reporting of emissions resulting from upstream production and downstream sources, to the extent that the Administrator deems it appropriate. The Administrator shall determine appropriate thresholds of emissions above which reporting is required, and how frequently reports shall be submitted to EPA. The Administrator shall have discretion to use existing reporting requirements for electric generating units under Section 821 of the Clean Air Act....”



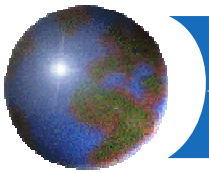
Mandatory GHG Reporting Rule-Requirements

- Rule applies to:
 - Direct emitters of greenhouse gases with emissions generally equal or greater to 25,000 metric tons/year (equivalent to 131 rail cars' worth of coal, or average annual energy use of 2,200 homes)
 - Suppliers of fossil fuels & industrial chemicals
 - Manufacturers of motor vehicles and engines
- Covers 85%-90% of total U.S. GHG emissions
- Excludes most small businesses and governments
- Reporting at the facility level



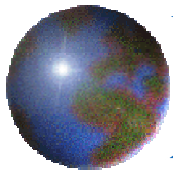
Mandatory GHG Reporting Rule - Status

- Status:
 - Signed March 10th, 2009 by EPA Administrator
 - Published in the Federal Register on April 10th, 2009
 - 60-day comment period open until June 9th, 2009
- Implementation (Proposal):
 - Annual reporting
 - Data collection begins January 1, 2010 with first reports submitted to EPA March 31, 2011
 - Preamble discusses other options if the final rule is not published in sufficient time to enable complete reporting of 2010 data using the methods described in the rule



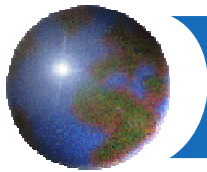
Waxman-Markey Discussion Draft

- Discussion draft introduced March 31, 2009
- If enacted, the bill would:
 - Advance energy efficiency and reduce reliance on oil
 - Create an economy-wide cap and trade program
 - Stimulate innovation in clean coal technology
 - Accelerate use of renewable energy sources
 - Create strong demand for clean energy technologies and assist economic recovery and job growth
- At request of bill sponsors, EPA's economic analysis of the bill was issued April 21st
 - Analysis focused on cap and trade provisions due to time limitations
 - EPA's preliminary economic analysis available at epa.gov/climatechange/economics/economicanalyses.html#wax



EPA/DOT Proposed Standards

- On May 19th 2009, EPA and DOT issued a Notice of Intent stating that the two agencies intend to work in coordinate to propose:
 - Standards for control of GHG emissions and fuel economy
- Coordination to propose standards for passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016

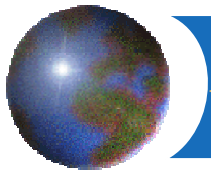


Global Warming Potentials (100 year)*

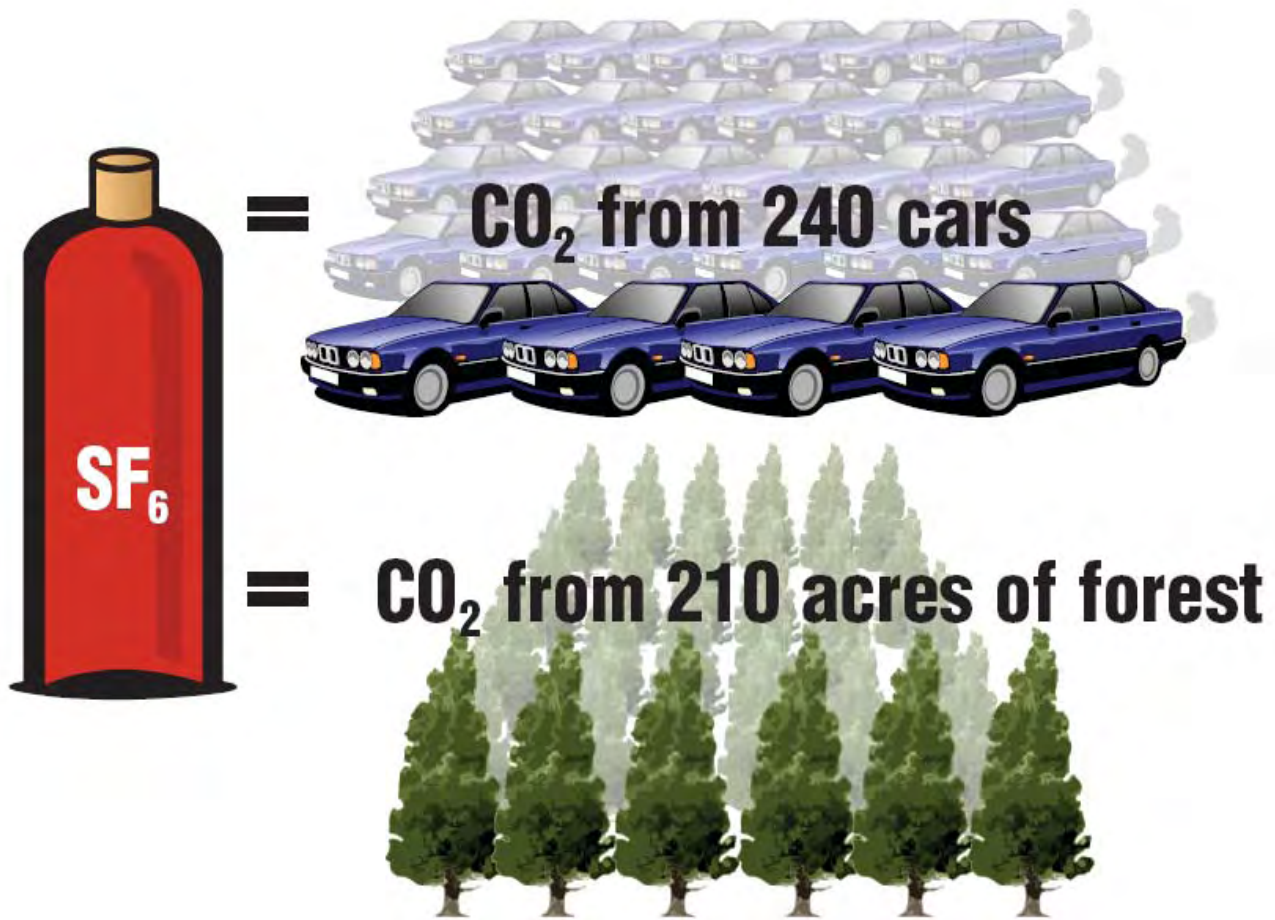
Compound	Atmospheric Lifetime (Years)	Global Warming Potential (100-year time horizon)*
CO ₂ *	200-300*	1*
3M TM Novec TM 612(C3F7C(O)C2F5)	0.014 **	~1**
HFC-134a	14.6*	1,300*
SF ₆	3,200*	23,900*

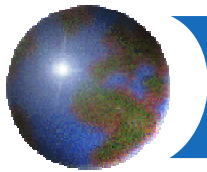
*IPCC 1995

**3M



SF_6

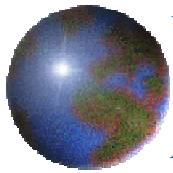




SF₆ Emission Reduction Partnership for the Magnesium Industry

- Voluntary partnership launched in 1999
 - 14 partner companies
 - Represents 100% of U.S. primary production and approx. 80% of U.S. magnesium casting operations

• Advanced Magnesium Alloys Corporation (AMACOR)	• Magnesium Div. of Meridian Operations, Inc
• Chicago White Metal Casting, Inc. (Bensenville, IL)	• Meridian (Eaton Rapids, MI)
• Consolidated Foundries (Pomona, CA)	• Magnesium Refining Technologies, Inc. (Bellevue, OH)
• CONTECH Metal Forge Division of SPX Corporation (Alma, MI)	• Product Technologies (Maple Lake, MN)
• Del Mar Die Casting (Gardena, CA)	• Spartan Light Metal Products (Sparta, IL)
• Internet (Palmyra, MO)	• Twin City Die Castings (Monticello, Minnesota)
• Garfield Alloys (Garfield Heights, OH)	• U.S. Magnesium (Salt Lake City, UT)



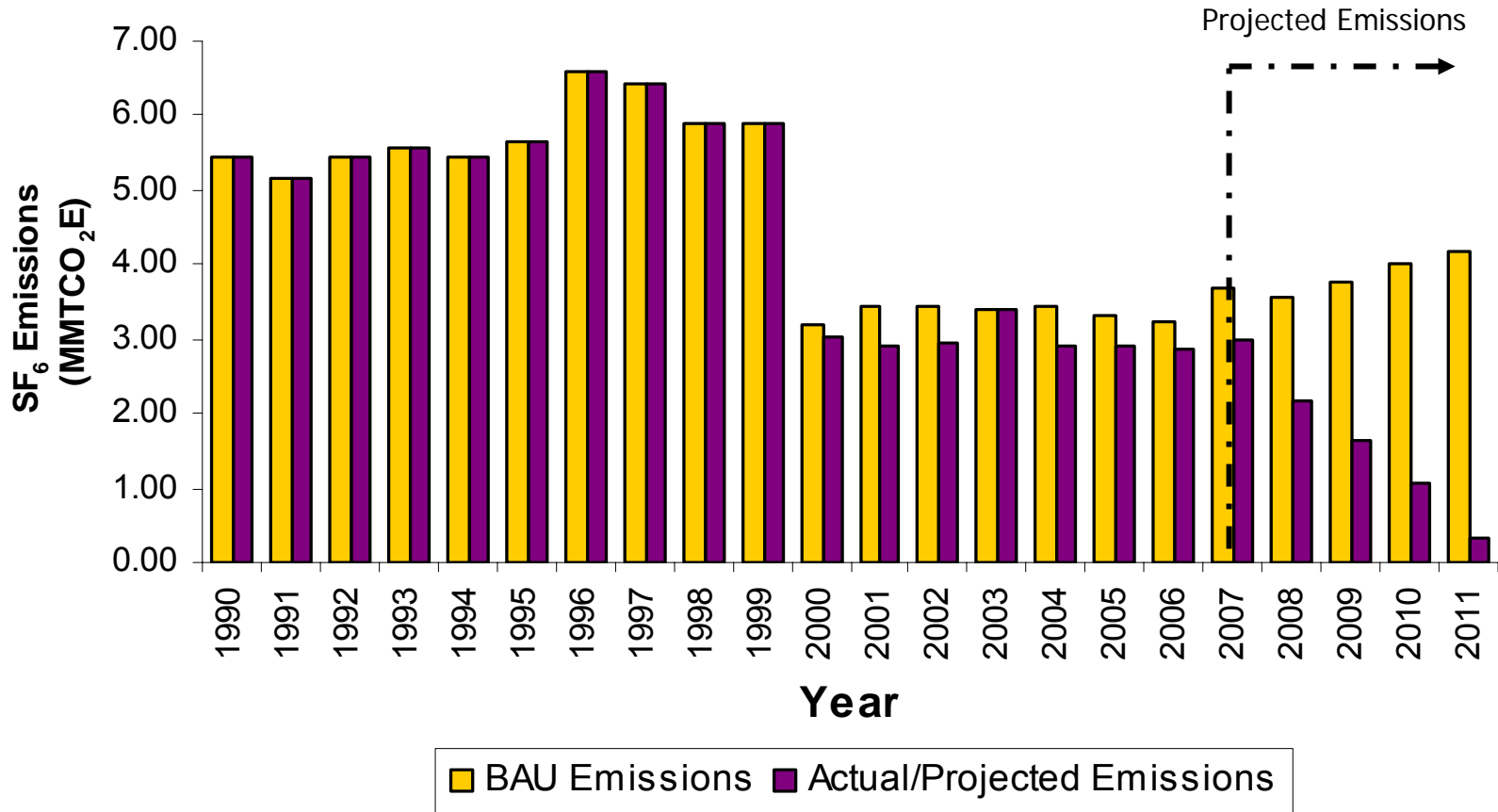
SF₆ Emission Reduction Partnership for the Magnesium Industry, cont.

- **Goal:**
 - **Eliminate SF₆ emissions by 2010**
- EPA provides:
 - Facilitate technical information sharing (Measurement studies and Tracking/reporting tools)
 - Recognition for achievement in protecting the climate
- Partners agree to:
 - Track and record SF₆ usage
 - Share lessons learned to reduce SF₆ emissions



U.S. Mg. Partner Accomplishments

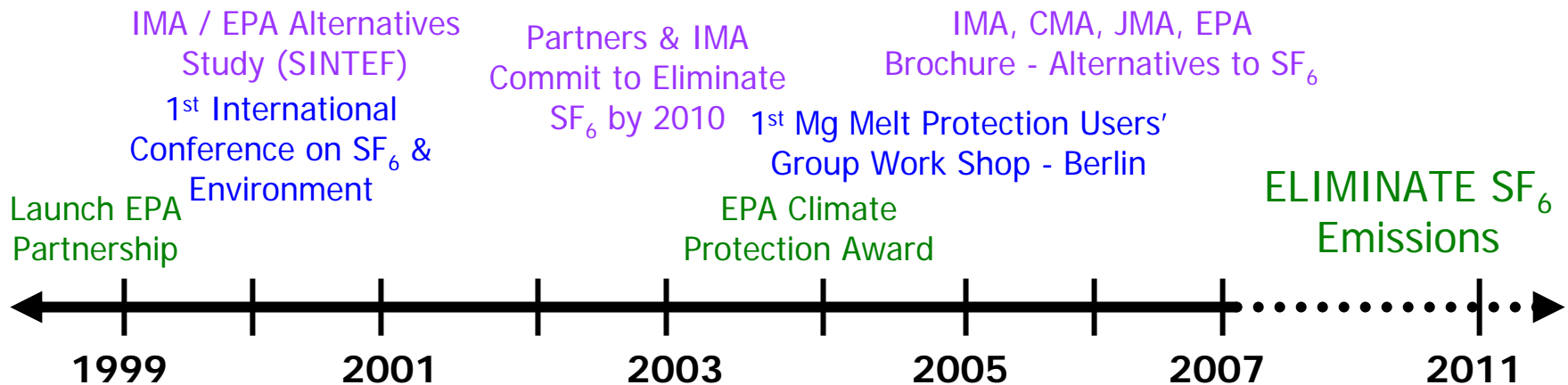
BAU vs. Actual/Projected Emissions

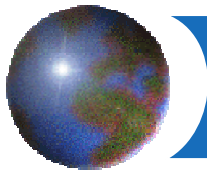




Partnership Timeline – Cooperation & Groundbreaking Achievements

- Full conversions to alternatives underway!
 - Magnesium Elektron (United Kingdom)
 - Tokai Rika (Japan)
 - Meridian Technologies (N. America)





Measurement Studies

- Five studies conducted since 2002
 - Three - die casting holding furnaces
 - Two - ingot casting hood
- *Characterization of Cover Gas and Byproduct Emissions from Secondary Magnesium Ingot Casting*, October 2008, Garfield Alloys/MagRe Tech
- *Characterization of Emissions and Occupational Exposure Associated with Five Melt Production Technologies for Magnesium Die Casting*, August 2007, Lunt Manufacturing
- *Alternatives to SF₆/SO₂ for Magnesium Melt Production*, August 2004, SINTEF Materials Technology
- *Characterization of Cover Gas Emissions from U.S. Magnesium Die Casting*, May 2004, Intermet

All available at: <http://www.epa.gov/highwp/magnesium-sf6/resources.html>



Conclusions

- Change is underway
 - A lot of policy uncertainty, but strong focus on tackling climate change
- Society is seeking technological solutions
 - Magnesium contributes to climate protection with lightweight automotive / transportation applications
- Must **ELIMINATE** SF₆ emissions to fully recognize climate benefits
- Requires immediate and sustained action to reduce emissions