

High-GWP Gas Tracking | Reporting | Repair | Deposit

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ARB Workshop on Stationary High-GWP Early Action Items
February 15, 2008

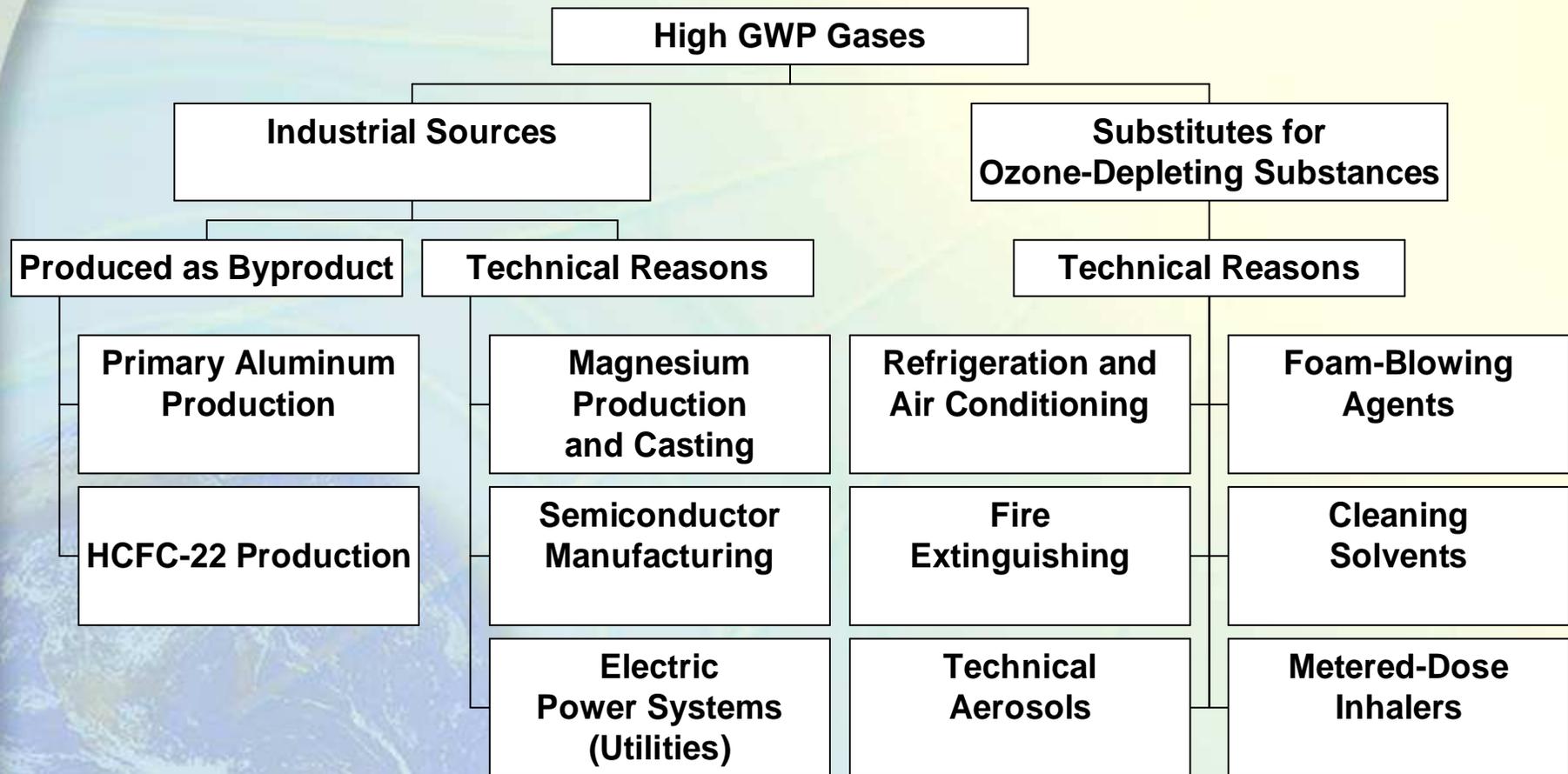
Outline

- Background
- Data Sources
- Emissions & Trends
- Existing Regulations & International Experience
- Potential Control Strategies & Costs
- Data Gaps & Research Needs
- Working group formation
- Timeline & Contact Information

Background

- Tracking/Reporting/Repair/Deposit of High GWP Gases Recommended as Early Action Measure
 - CA emissions originally estimated to range between 14 to 58 MMTCO₂E/year from multiple sources
 - Current emission controls limited or non-existent
 - Lack of market incentives
 - Range of possible strategies for consideration

How Are High-GWP Gases Used?

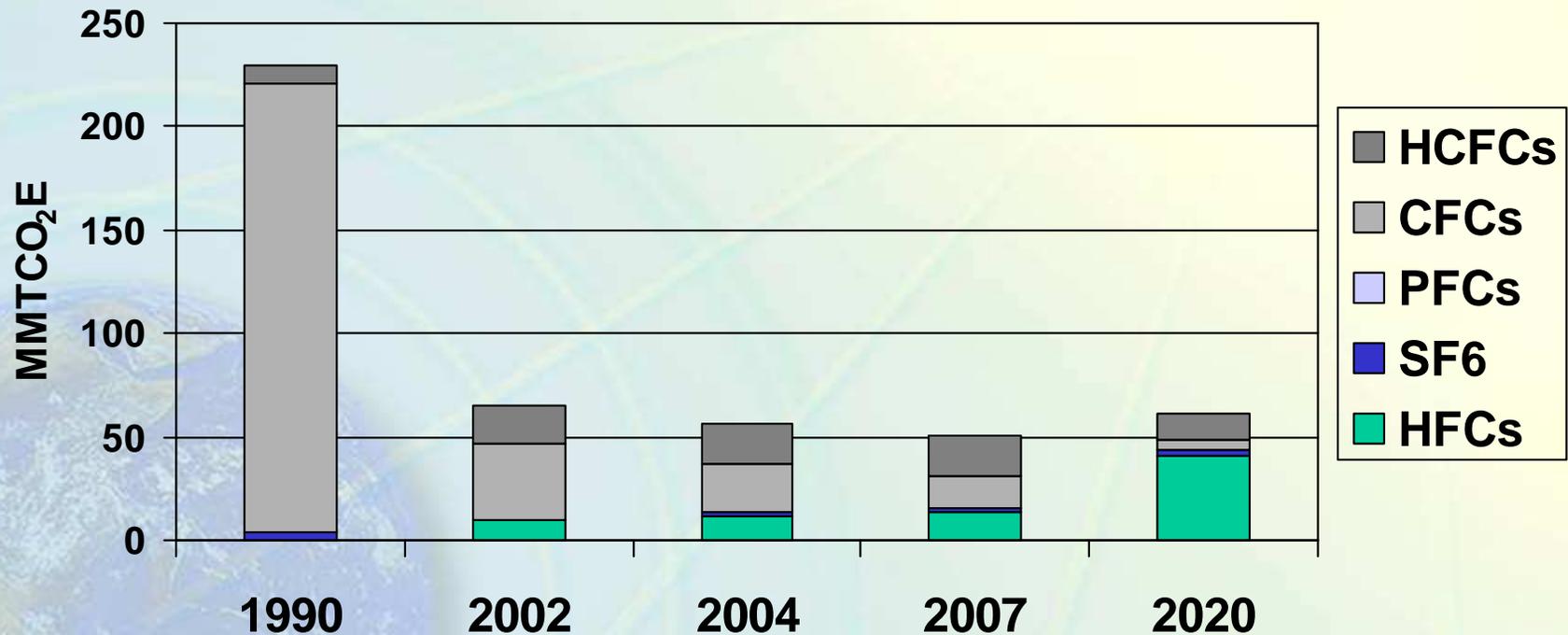


Data Sources

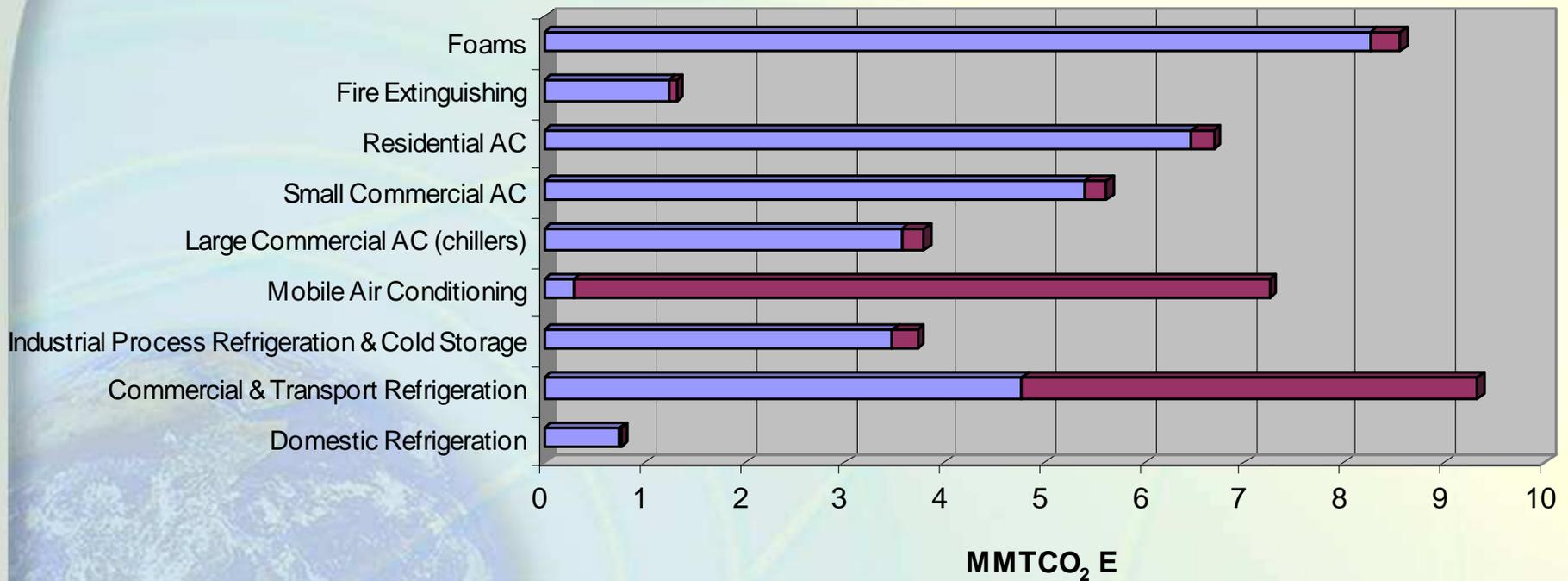
- **ODS and HFC Substitutes**
 - US EPA Vintaging Model
 - Historical and projected emissions
 - Chemical production and imports, equipment age, leak and release rates, market trends
- **SF₆ and PFCs**
 - US EPA Aluminum, Semiconductor, Magnesium, Electric Utility Partnership Programs
- **All Models and Data Undergo Continuous Expert Review**
- **California-Specific Estimates**

Emissions and Trends

California High-GWP Gas Emissions Business As Usual Projections



Estimated California 2006 ODS + HFC Emissions



■ ODS ■ HFCs

Source: Adjustments of US EPA
Vintaging Model estimates

Existing Controls

- Refrigerants have some restrictions under U.S. Clean Air Act and SCAQMD Rule 1415
 - No intentional venting during service and disposal
 - Leak repair
 - Technician certification
 - Recycling/recovery
 - *difficult to enforce*
 - *market disincentives*
- No reporting requirements for technicians
- No emission controls for non-refrigerants
- PFCs, NF_3 used in semiconductor manufacture subject to voluntary reductions through USEPA partnership

International Experience

- EU F-gas Regulations
 - HFCs, PFCs, SF₆
 - Containment, recovery, tech cert, labeling, reporting
 - Product bans
 - MVAC restrictions
- Australia/EU halon system decommissioning
- Japan
 - ODS recovery/disposal from R/AC systems
 - Technician certification

International Experience Refrigerant Fee Programs

COUNTRY	AUSTRALIA	NEW ZEALAND	CANADA	NORWAY	SWEDEN
Refrigerants accepted	CFCs, HCFCs, HFCs, PFCs	CFCs and HCFCs	CFCs and HCFCs	CFCs and HCFCs	CFCs, HCFCs, HFCs
Fate of refrigerant	Destroyed	Destroyed	Destroyed	Destroyed or reclaimed	Destroyed or reclaimed
Fee structure	Importers and wholesalers pay fee on import and sale	Wholesalers pay fee on import	Importers, reclaimers, producers pay sales and reclaim fee	Importers, reclaimers, producers pay sales fee	Importers, reclaimers pay sales fee

Potential Control Strategies

- Extend Sections 608 – 609 of CAA and Rule 1415 to all high GWP gases
- Expand enforcement of existing venting rules
- New reporting requirements
 - Facilities: Use of high GWP gases and energy use (Expand SCAQMD Rule 1415)
 - Owner/contractor: Used refrigerant sent for reclamation
- Ban 1-way cylinders or require cylinder recycling
- Deposit/return program
- Carbon offsets for high GWP gas destruction

- **Deposit/Return Program for Refrigerants**
 - Costs would likely be passed to consumers
 - Subsidy in short-term would likely be needed to compensate for time lag between deposit and rebate
 - Costs for California will be estimated
 - Depends on markup and whether there is sufficient incentive for returns
- **Costs for other potential strategies under review**

Data Gaps & Additional Research

- Design of deposit program
 - Wholesalers, retailers, manufacturers
 - Rebates vs. mandatory takeback
 - Subsidy needed?
 - Fee amount
 - *Leakage across California border could be pre-emptive*
- Coverage for reporting requirements and sales restrictions
 - CO₂E threshold for de minimis emissions
- Infrastructure/logistics for end-of-life management
- Impacts/feasibility of disposable cylinder restriction
- Integration of high-GWP destruction credits into comprehensive GHG market system

Working Group Formation

- **Key Stakeholders Include:**
 - Chemical and equipment users and manufacturers
 - Recyclers/reclaimers
- **Form Group by Spring 2008**
- **First Meeting in Summer 2008**
- **Continue to Meet as Necessary**
- **If Interested, Please Provide Contact Info**

Timeline

Spring 2008	Working Group/Stakeholder Formation
Summer 2008	1 st Working Group/Stakeholder Consultation Meeting
Fall 2008	1 st Public Workshop to Discuss Control Strategies and Options
Spring 2009	2 nd Working Group/Stakeholder Consultation Meeting
Summer 2009	2 nd Public Workshop on Proposed Strategies
Spring 2010	Board Meeting on Action

Contact Information

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– More Information

- Visit: <http://www.arb.ca.gov/cc/reftrack/reftrack.htm>
- Join list serve at:
<http://www.arb.ca.gov/listserv/listserv.php>

Questions?