

2004 SIP Summit

CONSUMER PRODUCTS

January 14, 2004



Outline

- **Background**
- **Existing Measures**
- **Consumer Products VOC Emission Inventory**
- **SIP Measures**
- **How Can We Achieve Further VOC Reductions?**
- **Other Possible Measures**
- **Summary**



What Are Consumer Products?



- **Chemically formulated products**
- **Used by household and institutional consumers**
- **Includes household, aerosol paint, personal care, automotive care products, etc.**
- **Comprised of hundreds of categories**

Requirements

- **California Clean Air Act requires**
 - Maximum feasible reduction in VOCs emitted by consumer products
 - Technologically and commercially feasible regulations
 - Preserve product forms
- **SIP commitments**
- **SIP lawsuit settlement agreement**



Existing Measures



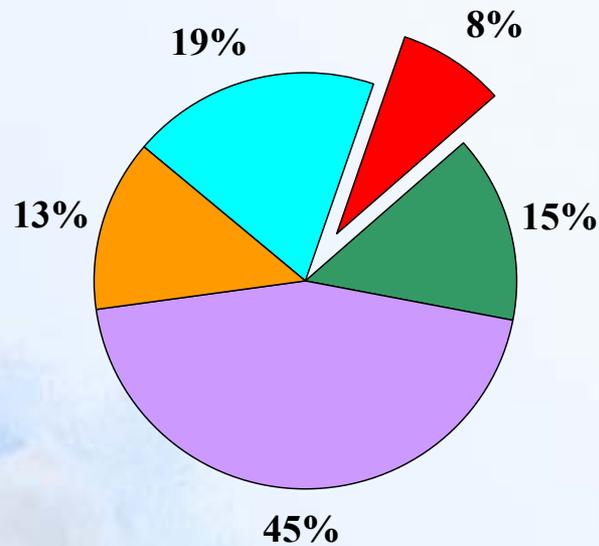
- **Five regulations adopted**
- **VOC limits for 83 categories of products**
- **Achieved 130 tons per day (tpd) of emission reductions**
- **Regulated category emissions reduced by 50%**
- **Overall, emissions reduced by 40%**

Existing Measures (con't.)

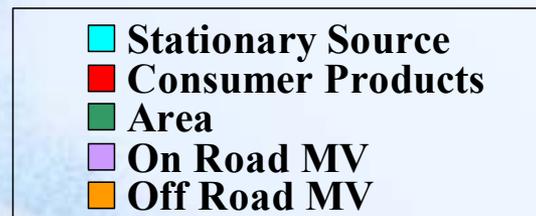
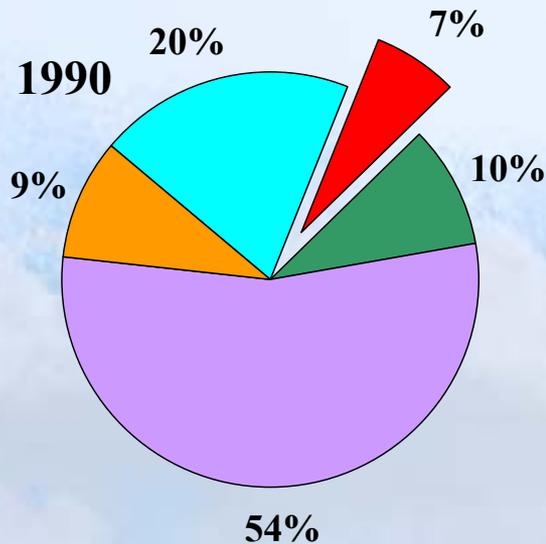
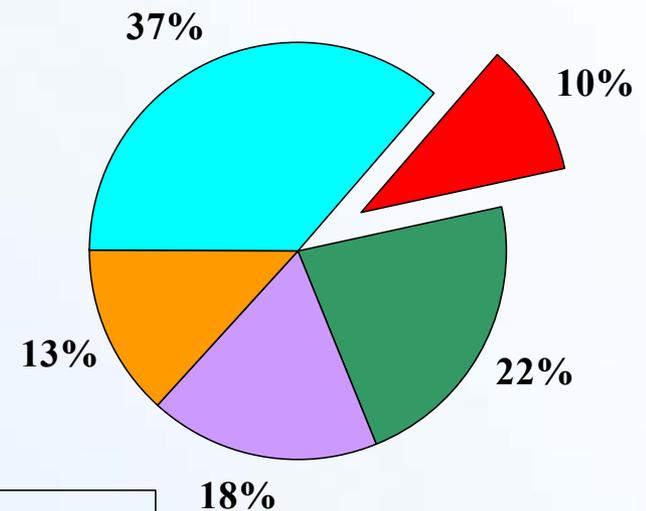
- **Prohibition on use of Perchloroethylene, Methylene Chloride & Trichloroethylene in:**
 - Aerosol Adhesives
 - Aerosol Coatings
 - Brake Cleaners
 - Carburetor and Fuel Injection Intake Cleaner
 - Engine Degreaser
 - Automotive General Purpose Degreasers
- **Track use for other products**

Statewide Consumer Products Emissions 1990 - 2010

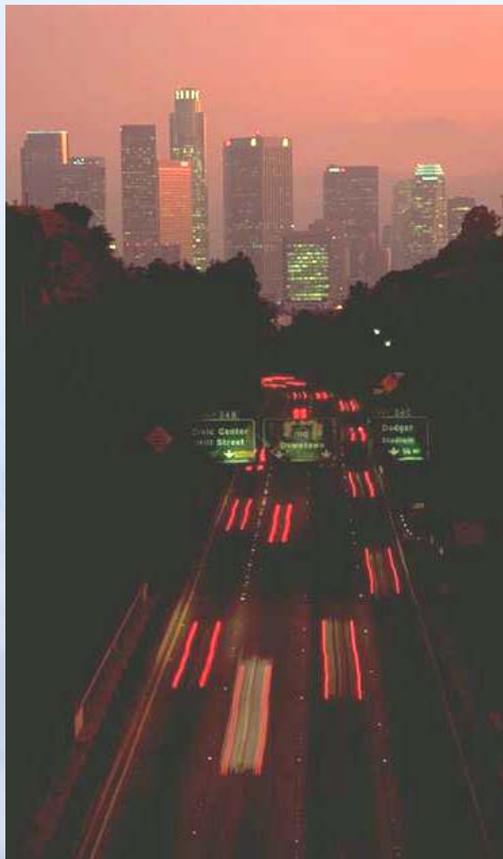
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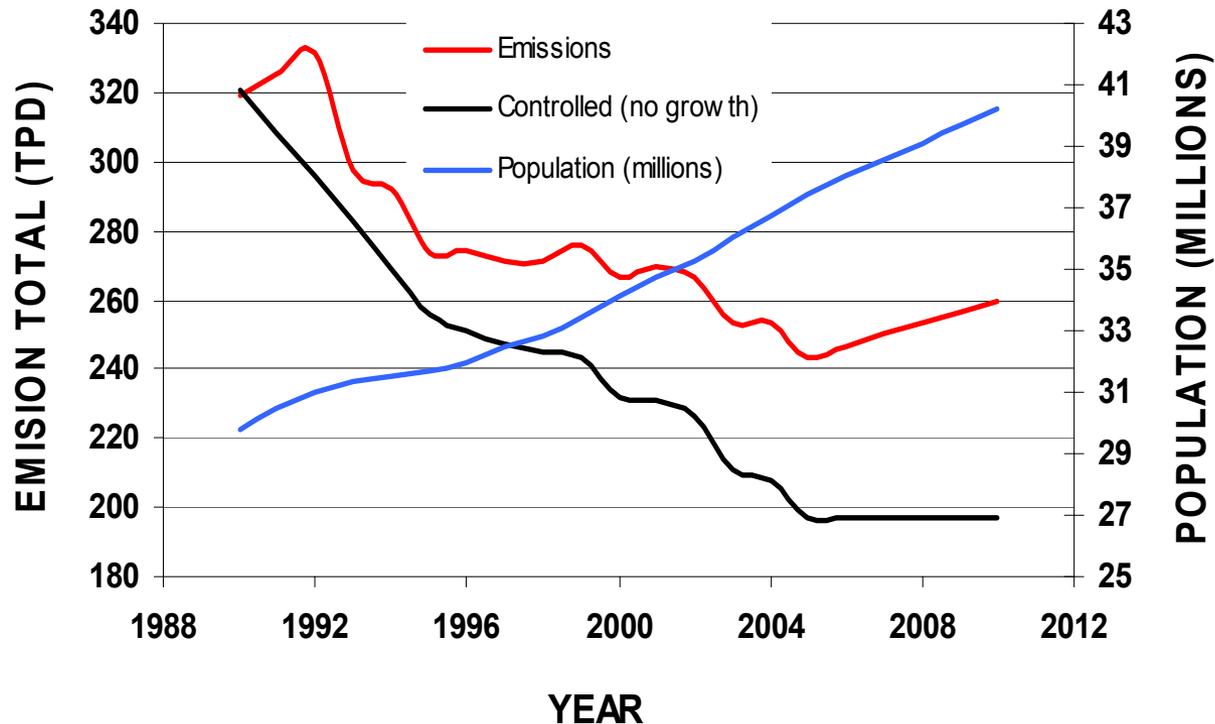
2010



Population Growth Erodes Benefits of Program



Consumer Products Emissions Trend



Largest Emitting Categories

- **21 categories with emissions over 2 tpd**
- **Two-thirds of total consumer product emissions**
- **17 of the 21 are regulated**
- **160 tpd emissions in 2010**
- **Achieved approximately 40% reduction from these categories**
- **Additional reductions included in current SIP commitment**
- **Many categories subject to multiple rulemakings**

21 Largest VOC Emitting Categories -- 2010

Category	CA Emissions (tpd)	# of Times Regulated
Hair Spray	35	2
Multipurpose Solvents	19	0
Rubbing Alcohol	13	0
Fragrance (<20%)	10	2
General Purpose Cleaners	9	2
Disinfectants	8	0
Paint Removers	8	1
Brake Cleaners	7	2
Non-Flat Aerosol Paints	7	2
Carb and Choke Cleaners	5	2
Charcoal Lighter Fluids	5	1

21 Largest VOC Emitting Categories -- 2010 (cont'd)

Category	CA Emissions (tpd)	# of Times Regulated
Dual Phase Air Fresheners	5	2
Glass Cleaners	4	3
Multipurpose Lubricant	4	1
Solid/Gel Air Fresheners	4	1
Insect Repellants	3	1
Caulking Compounds	3	1
Antiperspirants	3	2
Astringents	3	0
Floor Wax Strippers	2	2
Furniture Wax and Polish	2	2

Multipurpose Solvents

- Category was recently surveyed
- Currently analyzing category, breaking up in to logical sub-categories
- Evaluating emissions for setting limits in 2004 rulemaking



Rubbing Alcohol



- **Emissions of 13 tpd**
- **Medical uses and health benefit**
- **Most products formulated to about 70% isopropanol in water**
- **Maximum antimicrobial efficacy achieved at 70%**
- **No clear reformulation option at present**

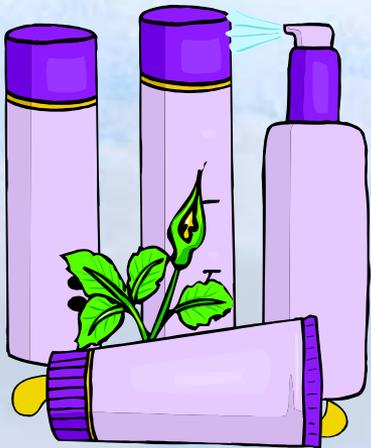
Disinfectants

- **Emissions of 8 tpd**
- **Health benefit products**
- **Reformulation must maintain product antimicrobial and antiviral efficacy**



Astringents and Toners

- Emissions of 3 tpd
- Medicated products included in category
- Planned for rulemaking in 2005/2006



Medium-sized Categories

- **20 categories with VOC emissions between 1 and 2 tpd**
- **18 currently regulated, many subject to multiple limits**
- **Emissions are about 30 tpd**
- **Examples are penetrants, windshield washer fluids, and engine degreasers**
- **Achieved approximately a 70% reduction from these categories**
- **Being assessed for further reductions**

Smaller Categories

- **About 70 categories with VOC emissions between 0.1 and 1 tpd**
- **Total emissions about 34 tpd**
- **Examples are hair mousses, shaving gels, and fabric protectants**
- **Achieved approximately a 45% reduction from these categories**
- **Being assessed for further reductions**
- **Some categories being evaluated for the 2004 rulemaking**

Very Small Categories

- **Hundreds of categories with emissions less than 0.1 tpd**
- **Examples are tooth paste, eye liners, crayons, etc.**
- **Emissions are approximately 25 tpd**
- **Evaluating how to address these categories**

SIP Measures

- **Near-term**
 - Three surveys in 2003, 2004, and 2006
 - Three rulemakings in 2004, 2006, and 2008
 - 25 - 40 tpd VOC reductions statewide
 - Evaluate further reductions in near-term
 - All reductions realized by 2010
- **Long-term**
 - Consider future consumer products regulations

VOC Limit

Development Process

- **Public process with stakeholder involvement**
- **Regular surveys**
- **Evaluation of current technology**
- **Emerging technologies and technology transfer**



VOC Limit

Development Process (cont'd.)

- **Economic Impacts**
 - Cost to Reformulate
 - Cost to Consumers
- **Environmental Impacts**
 - Evaluate Air Toxics Impacts
- **Effective Date**

Emission Reduction Strategies Evaluated

- **Emerging technologies**
- **Exempt VOC compounds**
- **Use of water**
- **Other non-VOC ingredients**
- **Photochemical reactivity**



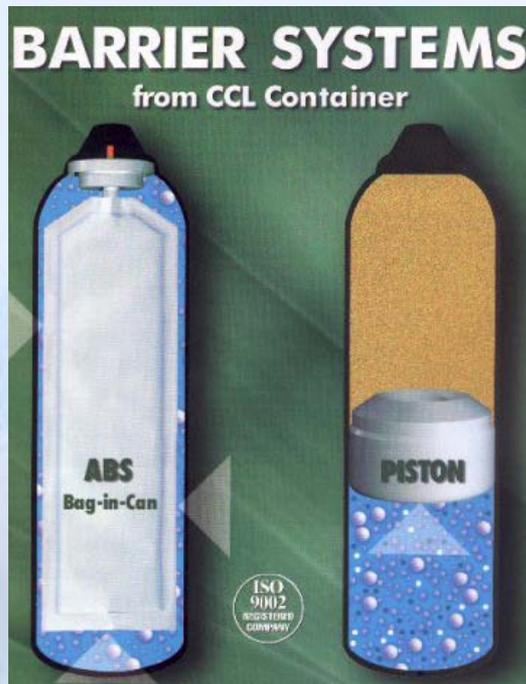
Emerging Technologies

- **Delivery Systems**



- Spray technology
 - Propellants
- Metered spray rates
- Foam forming technology

Emerging Technologies (cont'd.)



- **Packaging Systems**
 - Barrier Packs
 - Other Alternatives

Exempt VOC Compounds

- Several VOCs granted “VOC exemption” due to negligible or lower reactivity in the atmosphere
- **Examples:**
 - Acetone
 - HFC 152a
 - Methyl acetate
 - Volatile methyl siloxanes



Use of Water

- **Inorganic solvent**
- **Number 1 ingredient in consumer products**
- **Water with small amount of surfactants yields effective cleaning products**
- **Water and VOC emulsions “mimic” higher VOC products**

Other Non-VOC Ingredients



- **Alkaline compounds**
- **Hydrogen peroxide**

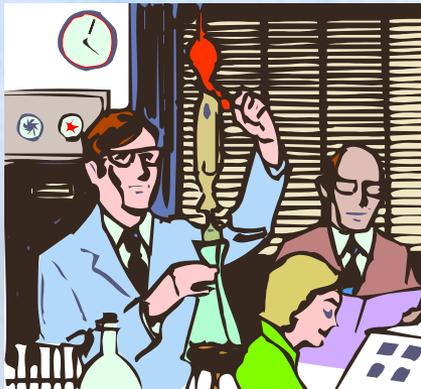
Photochemical Reactivity

- **Measure of amount of ozone formed from reaction of an individual VOC in the atmosphere**
- **Requiring use of “lower reactive” VOCs provides ozone reduction benefit**
- **Strategy currently used in aerosol coatings**



Reformulation Challenges

- VOCs are “actives” or “carry” active ingredients
- Commercial and technological feasibility must be preserved
- Avoid increasing use of TACs



Other Possible Measure

- **Removal of product form constraint (would require legislation)**
- **Could lead to 10 tpd reduction above current commitment**

Summary

- **Despite significant reductions to date, consumer products continue to be a significant emissions source**
- **SIP commitment to achieve 25-40 tpd by 2010**
- **After SIP measures are implemented, 2010 emissions from consumer products will be approximately 220 to 235 tpd**
- **Will continue to pursue opportunities for further reductions which may require innovative approaches**