

# Motor Vehicle Emissions and the Government Response

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"Meeting Mexico's Air Quality Challenges"

# Introduction

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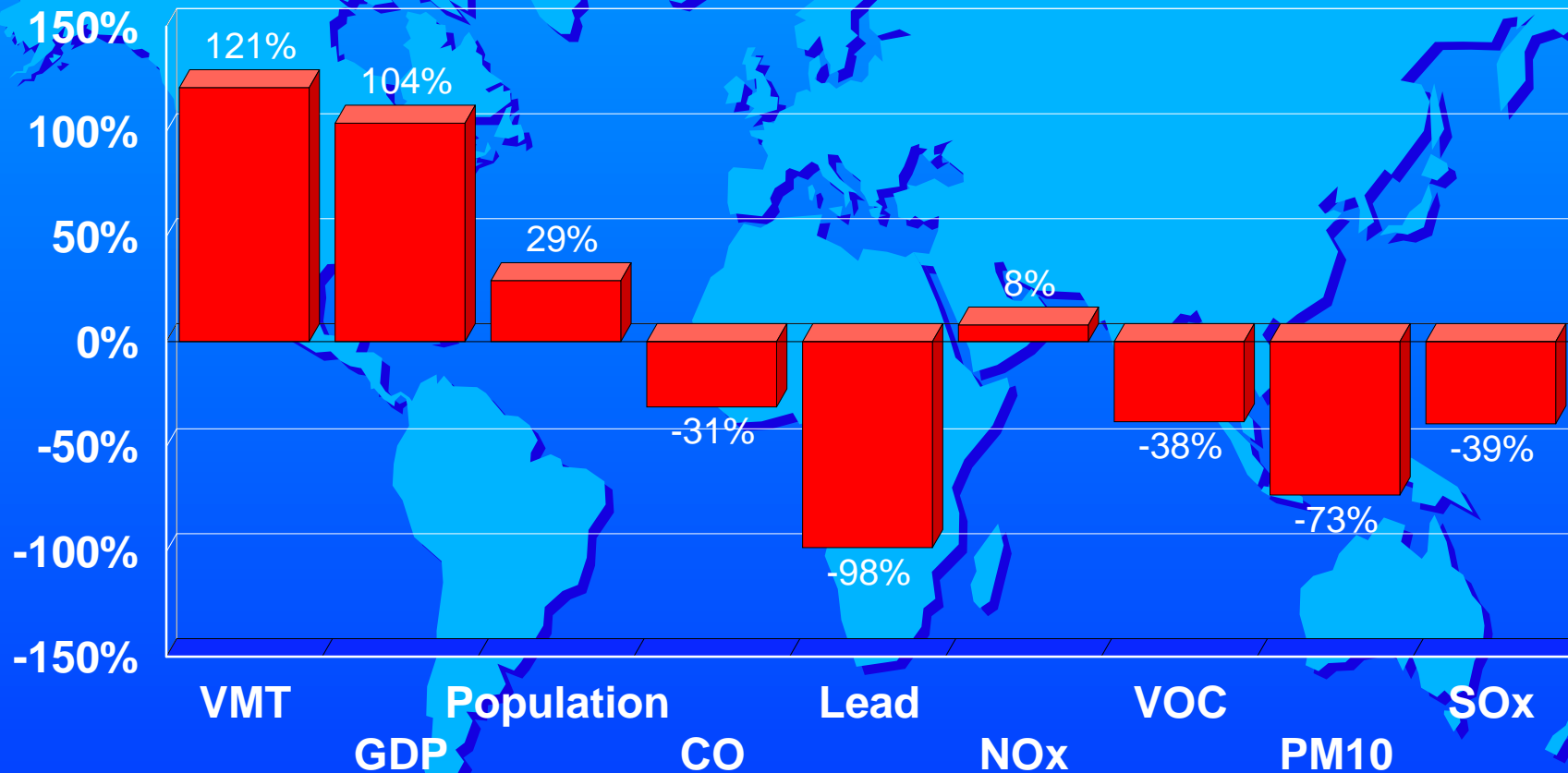
- **Motor Vehicles Contribute to Serious Air Quality Problems Worldwide**
- **Motor Vehicle Emission Control Programs That Have Been Established Over the Past 30 Years Are Helping To Address These Problems**
- **Serious Air Quality Problems Remain**
- **Expanding the Implementation and Enforcement of Effective Programs Will Help Address Future Air Quality Problems**

# Motor Vehicle Emissions Contribute to Serious Air Quality Problems

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- **Pollutants That Cause Ground Level Ozone**
- **Carbon Monoxide**
- **Particulates**
- **Toxic Air Contaminants**
- **Greenhouse Gas Emissions**

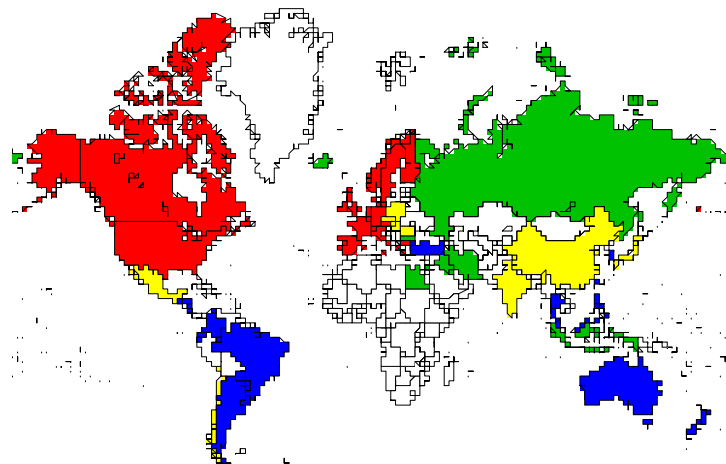
# Change from 1970 to 1996 United States



National Air Quality and  
Emissions Trends Report 1996

# New Vehicle Emissions Requirements

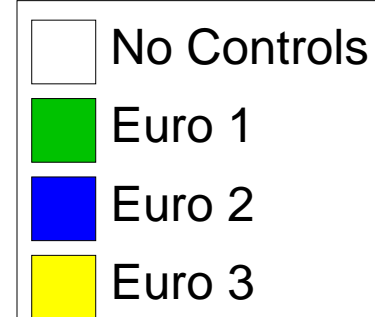
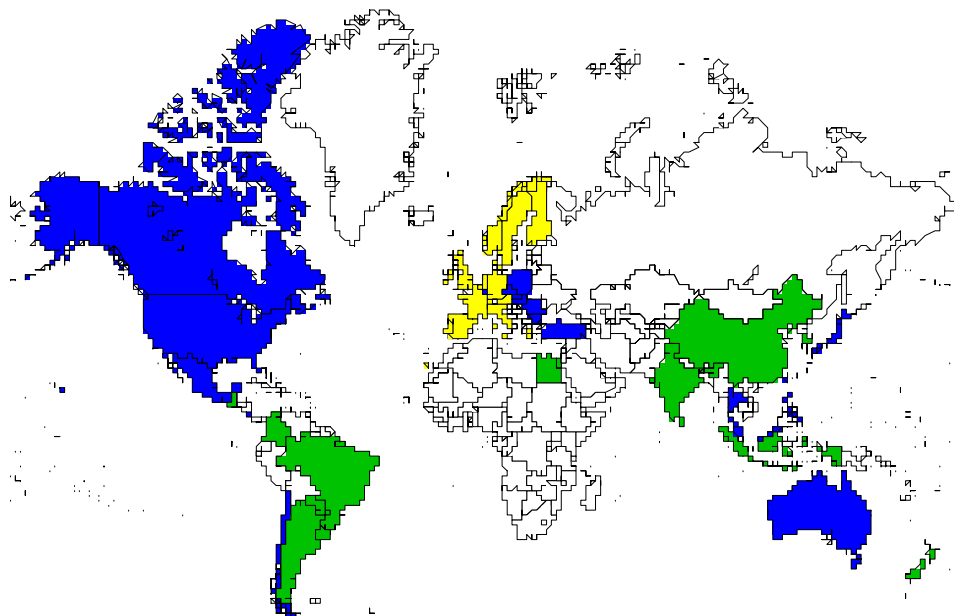
## Emissions Controls Light Duty Gasoline Vehicles 2000



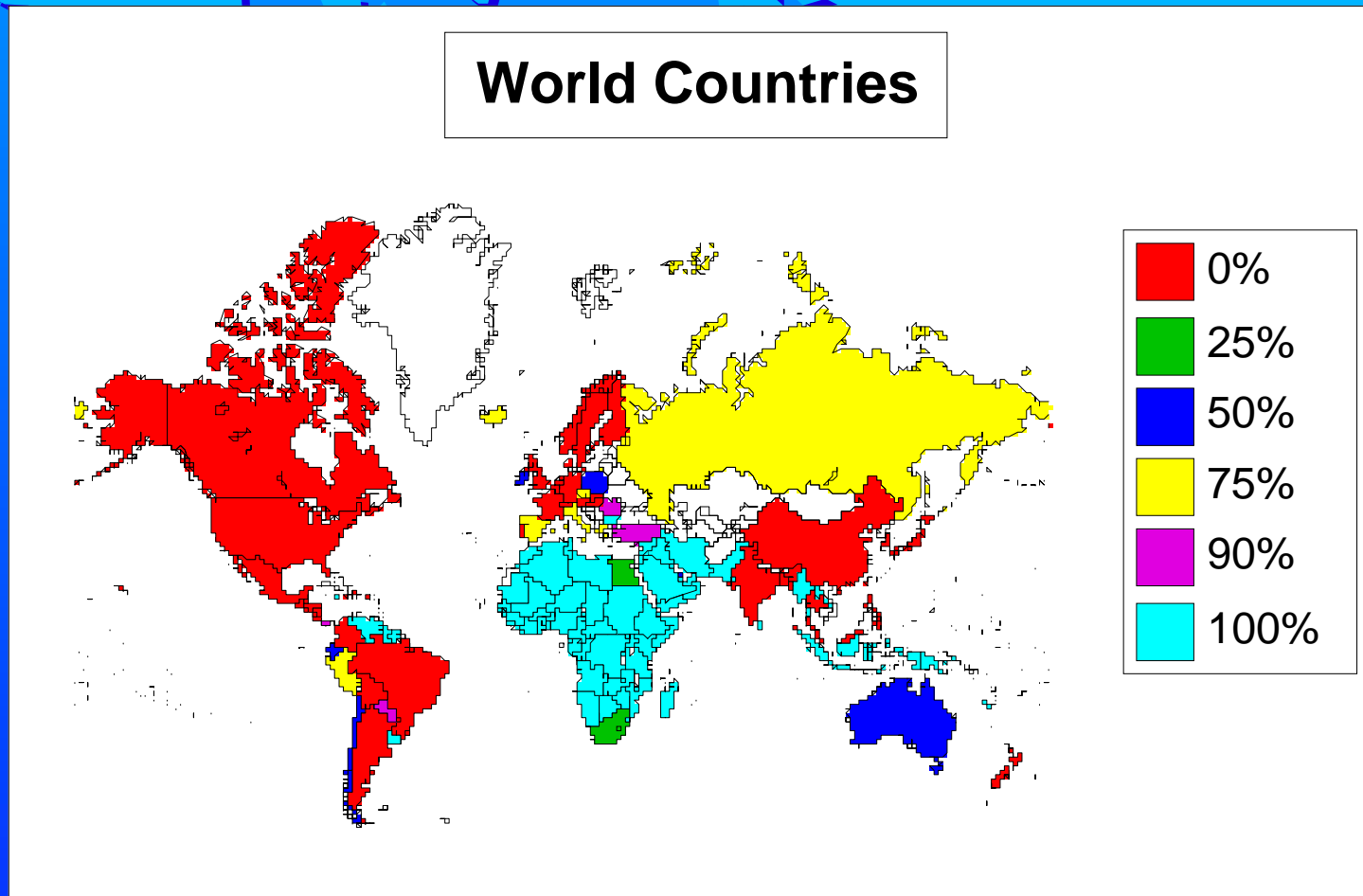
- No Controls
- Engine Modifications
- Three Way Catalysts
- Tier 1/Euro 1
- LEV/Euro 3

# New Vehicle Emissions Requirements

## Emissions Controls Light Duty Diesel Vehicles 2000

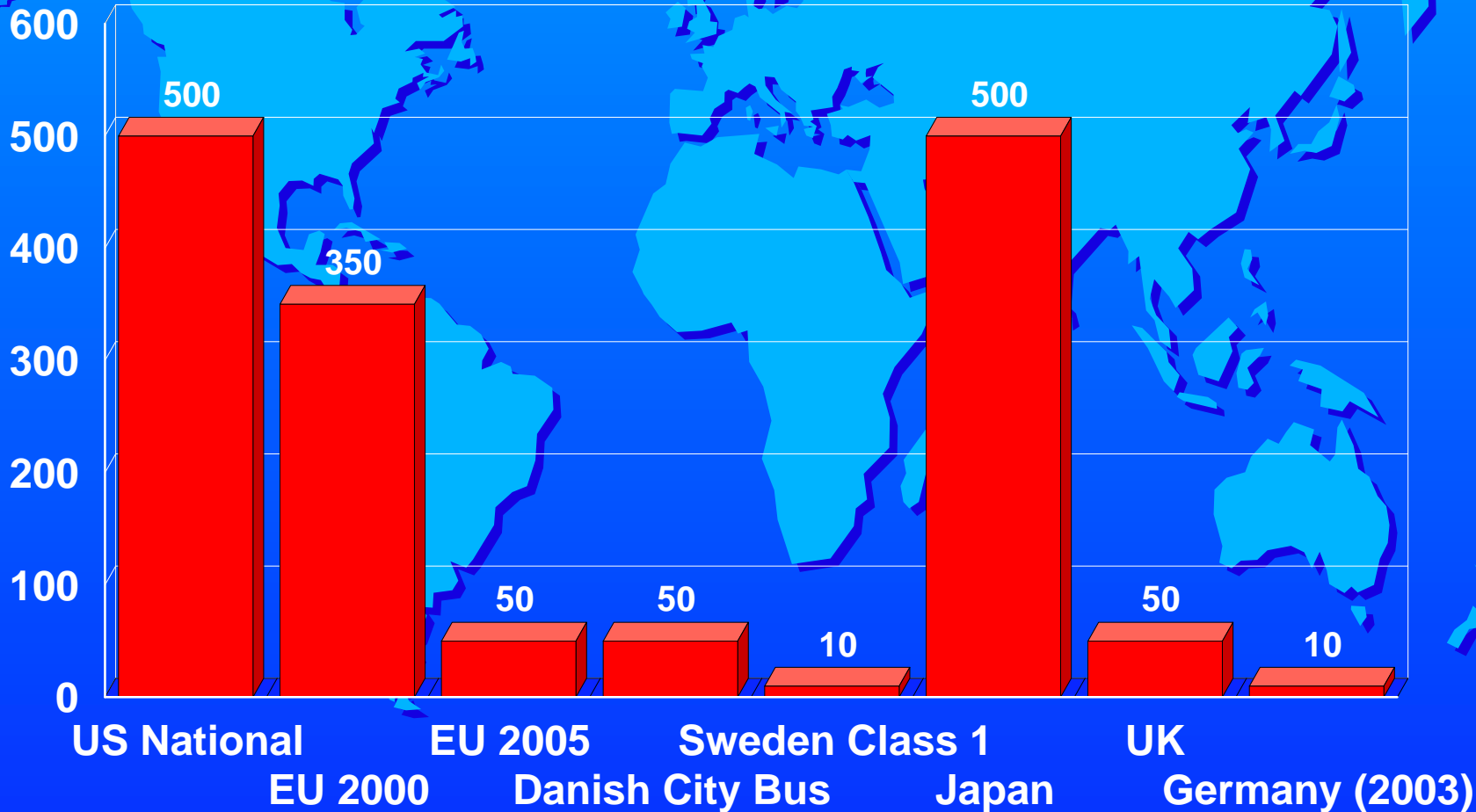


# Leaded Gasoline Sales in 2000



# Diesel Fuel Sulfur Specifications

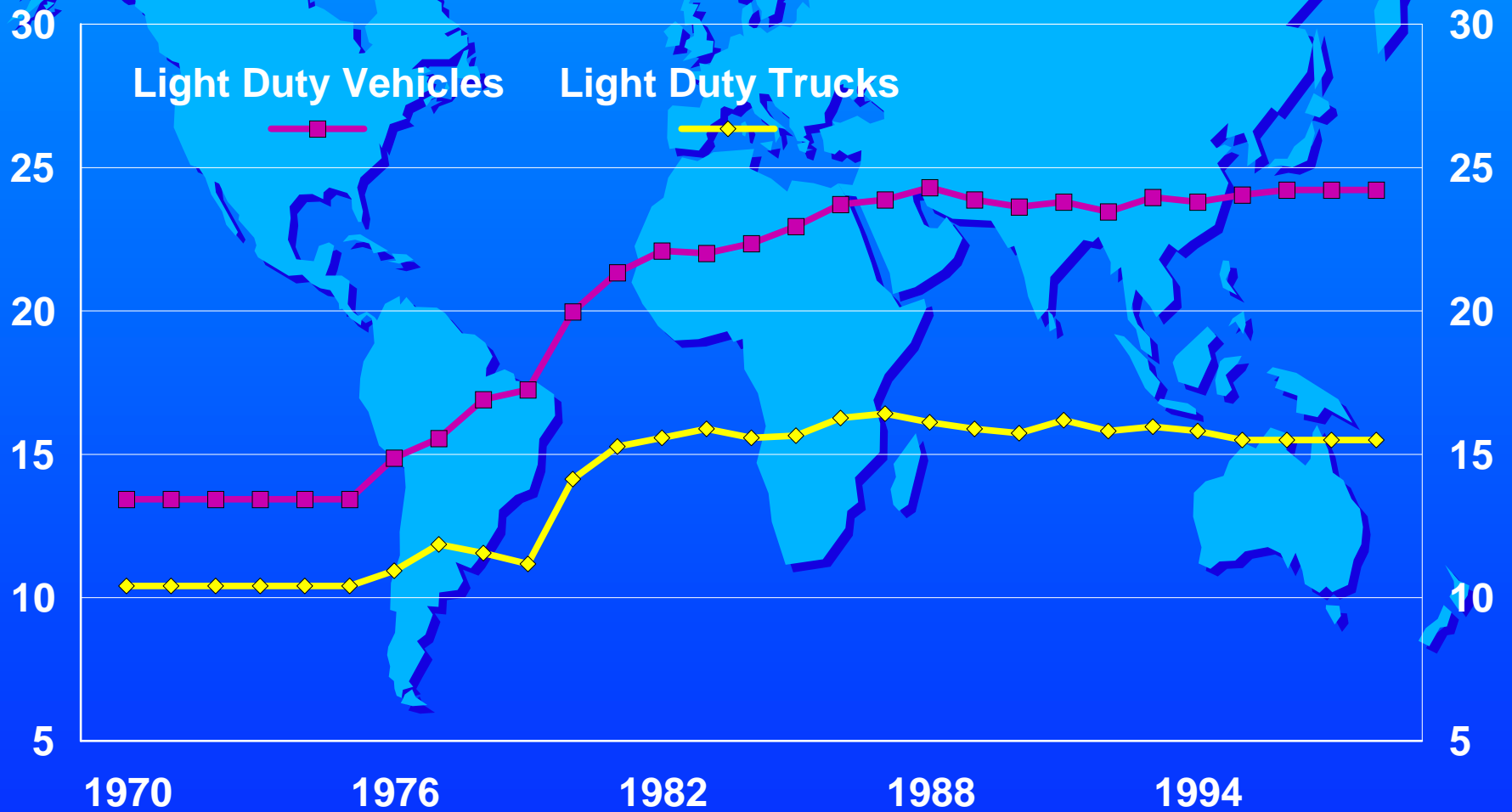
PPM



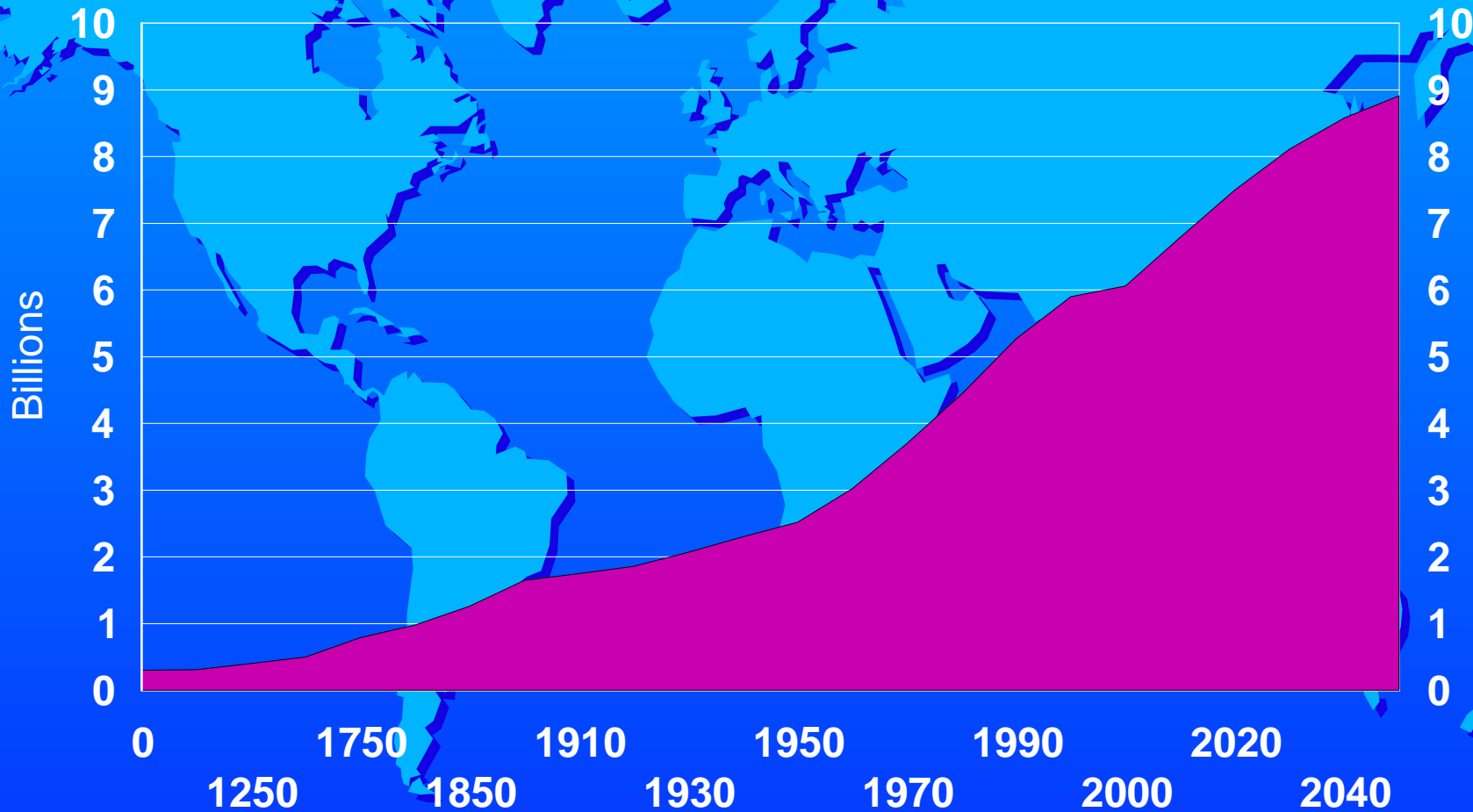


# Fuel Economy of New Vehicles

New Vehicle MPG



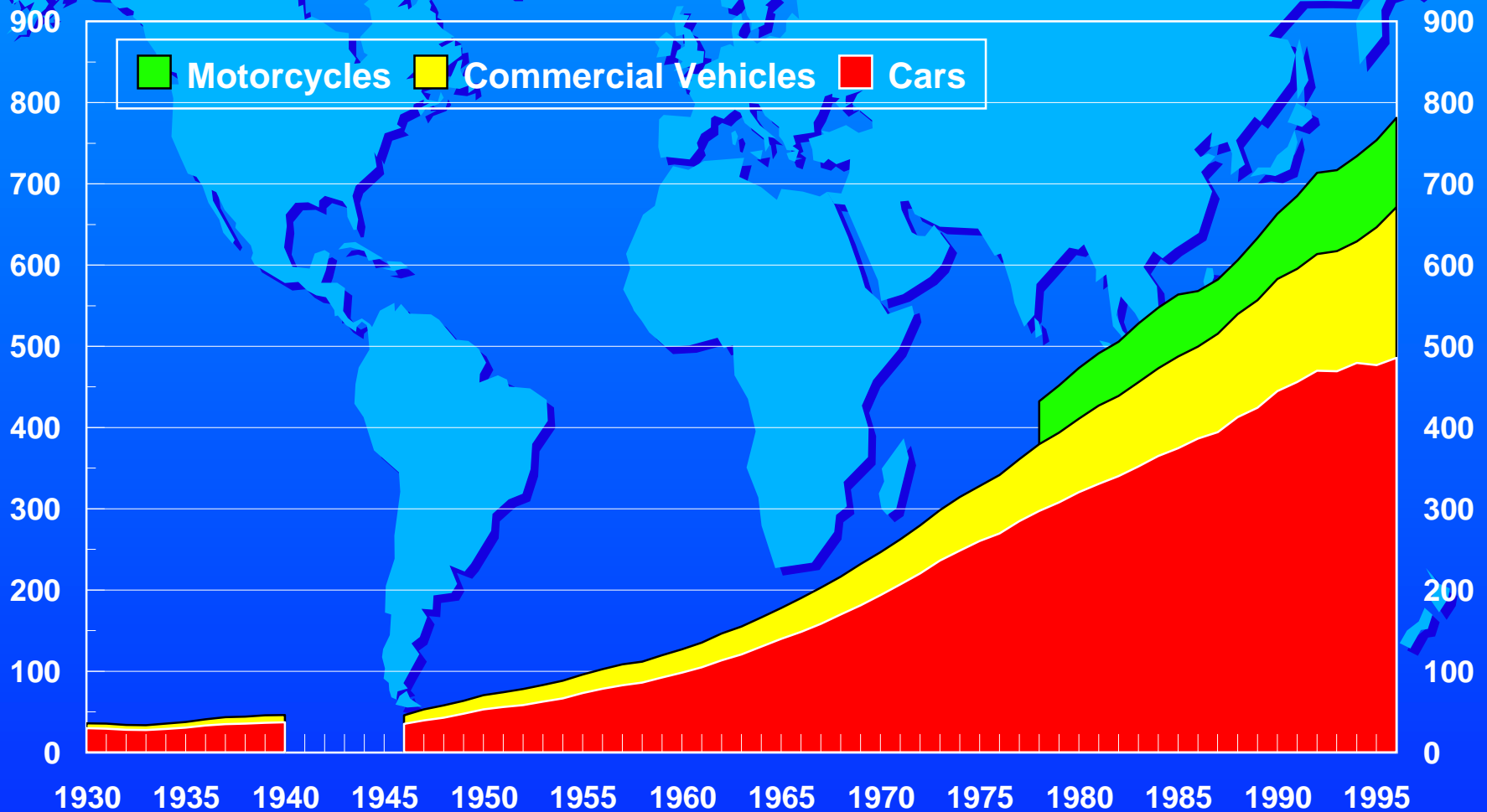
# Global Population Trends and Projections



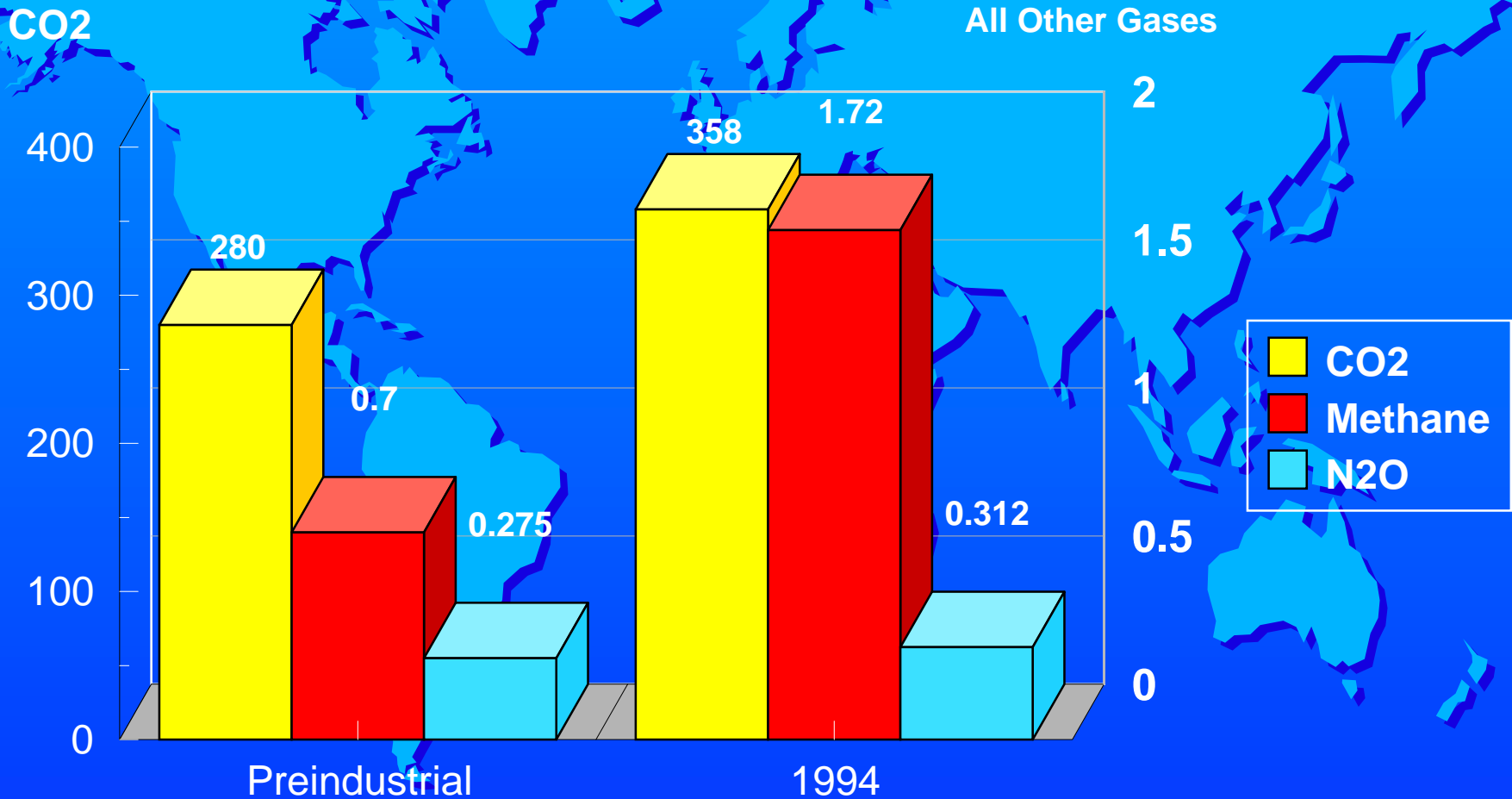
Source: United Nations

# Global Trend In Motor Vehicles

Millions of Vehicles



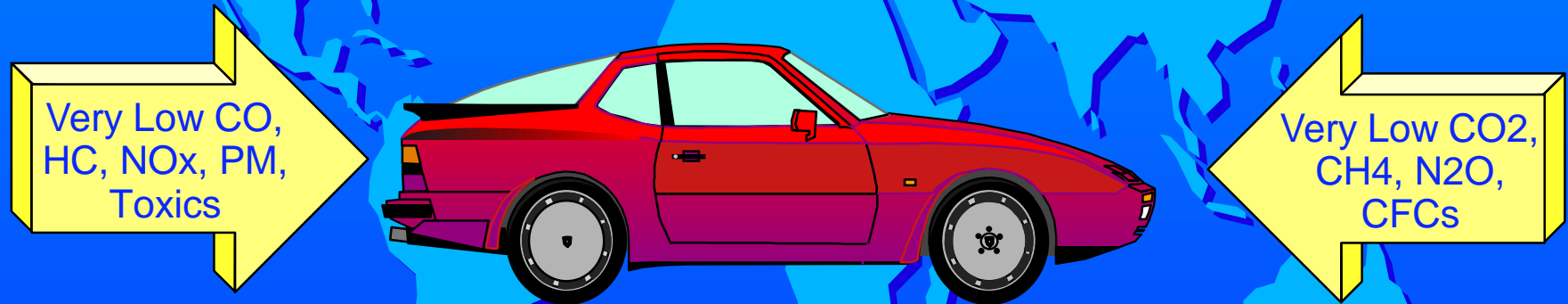
# Global Atmospheric Concentrations of Greenhouse Gases - PPM



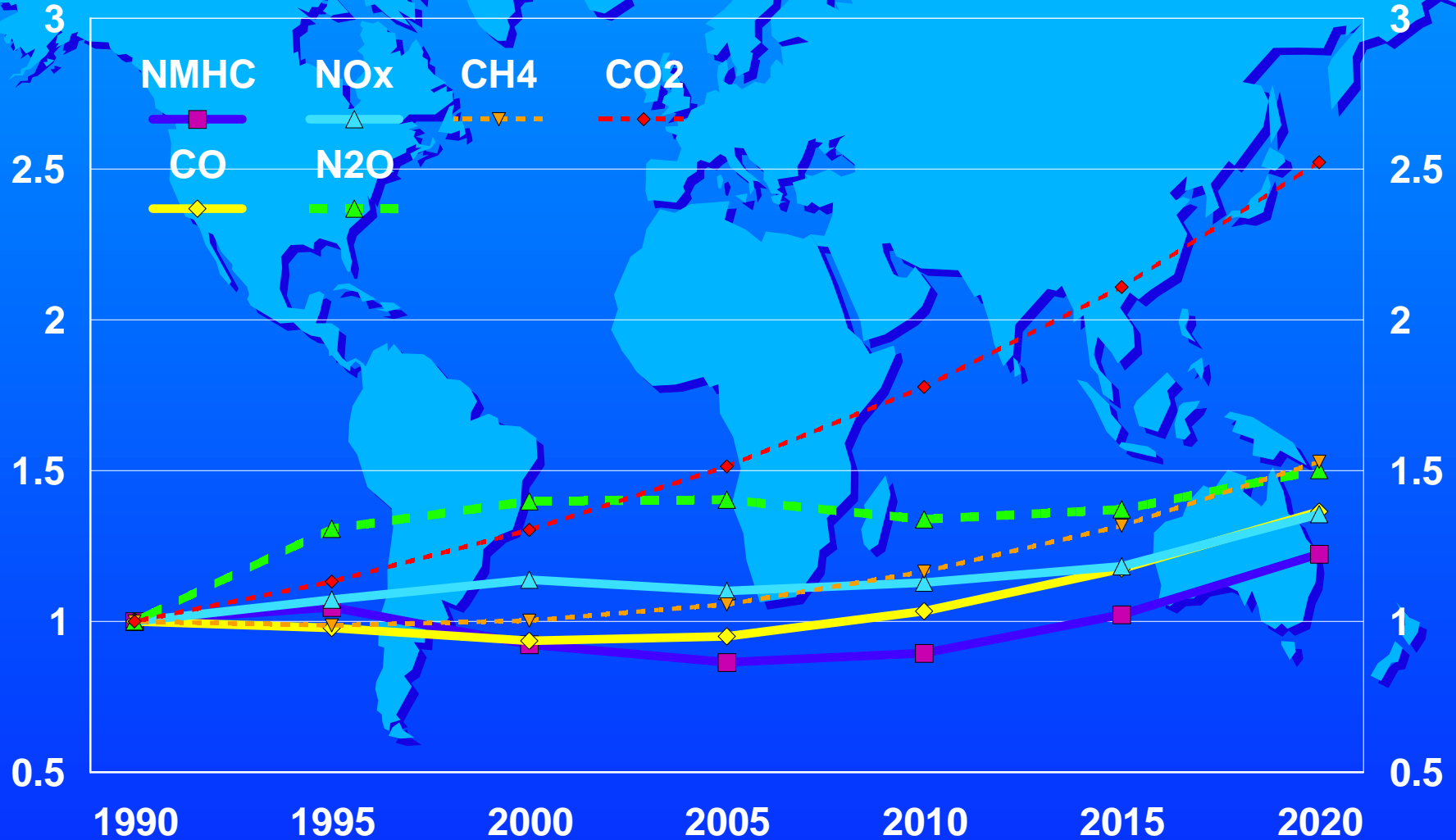
Source: IPCC

# Ongoing Challenges for Vehicles

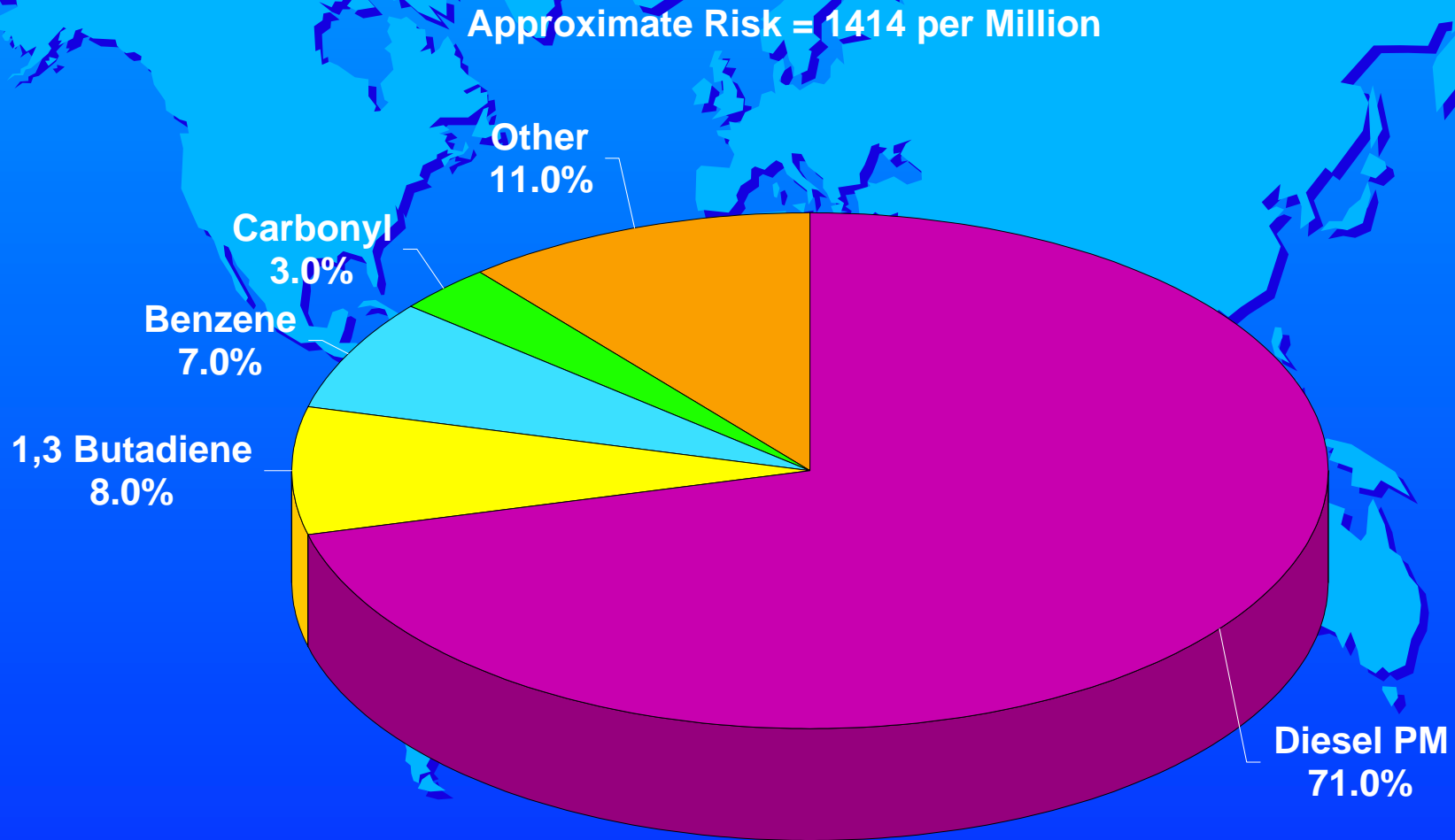
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# Global Trends in On Road Motor Vehicle Emissions (Normalized to 1990)



# Average Los Angeles Basin Cancer Risk Apportionment



# Motor Vehicle Emission Control Program Developments Outside of North America

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## ■ Europe

- European Union (EU) adopts tighter emission standards for cars, light trucks, and heavy-duty engines
- EU adopts sulfur limits in gasoline and diesel (50 ppm sulfur)
- EU agrees on "voluntary" vehicle CO<sub>2</sub> reduction
- Eastern Europe (Poland, Hungary, Czech Republic) moving towards EU



# Motor Vehicle Emission Control Program Developments Outside of North America (continued)

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## ■ Japan

- Tightened gasoline car standards for the first time since 1978
- Tightened diesel car and truck standards
  - Further tightening of standards expected in 2005
  - Requirement to low sulfur level in fuel expected in 2005
- Major Diesel Retrofit Program in Tokyo

# Motor Vehicle Emission Control Program Developments Outside of North America (continued)

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## ■ China

- Lead phased out by 2000
- Introduce Euro 1 standards for cars and light trucks in 2000 (Beijing, Shanghai 1999)
- Introduce Euro 1 standards for heavy trucks in 2001 (Beijing in 2000)
- I/M demonstration program in Shanghai

# Motor Vehicle Emission Control Program Developments Outside of North America (continued)

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## ■ India

- Lead in gasoline phased out in 2000
- Cars must meet Euro 1 standards
- Trucks and buses must meet Euro 1 standards in 2000
- Tighter motorcycle standards in 2000

# Motor Vehicle Emission Control Program Developments Outside of North America (continued)

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- **The Rest of the World**
  - Tighter standards being phased in in countries such as:
    - Taiwan
    - Korea
    - Philippines
    - Australia

# Conclusions

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- **While Significant Progress Has Been Made in Reducing Motor Vehicle Emissions Worldwide, Serious Air Quality Problems Remain**
- **Emission Control Programs to Address these Air Quality Problems Are Being Implemented Throughout the World**
- **Advances in Engine Technology, Emission Control Technology and Fuel Quality Will Play a Major Role in Addressing Air Quality Problems**