

CLEAN AIR CHOICE®
IMPROVING THE AIR
WE BREATHE

清洁空气的选择®
改善我们呼吸的空气

ANGELA TIN
OCTOBER 2016
2016年10月



THE PIECES 点滴信息

❖ WHO WE ARE

我们是谁

❖ ABOUT LUNG CANCER

关于肺癌

❖ CLEAN AIR ACT

清洁空气行动

✓ USEPA 美国环保署

✓ POLLUTION 污染

✓ MOBILE TRANSPORTATION SOURCES 移动运输污染源

❖ EFFORTS OF THE AMERICAN LUNG ASSOCIATION

美国肺协会做出的努力

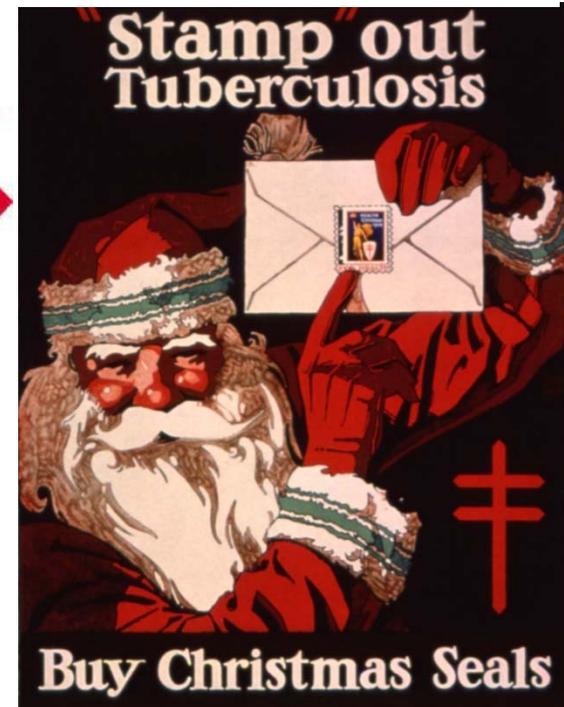
❖ THE BENEFITS OF ETHANOL

乙醇燃料的优越性



HISTORY 历史

- 1904
 - ✓ National Tuberculosis Association
全国肺结核协会
 - ✓ Christmas Seals
圣诞节封口纸
- 1906 - Lorraine Cross
 - 1906 - 洛林双十字
 - ✓ Crusaders 十字军
 - ✓ French Cross of Lorraine
法国洛林十字架
 - ✓ Crusade against the White Plague
十字军遭遇白色瘟疫



CAUSES OF LUNG CANCER 肺癌致病因素

- ❖ Smoking 吸烟
- ❖ Exposure to radon gas 接触氡气体
- ❖ Exposure to chemicals –workplace (asbestos, silica)
接触化学品—在工作环境中（石棉，矽）
- ❖ Air pollution – transportation and industrial sources
空气污染 — 运输和工业污染源
- ❖ Previous lung disease – tuberculosis 曾罹患肺部疾病 — 肺结核
- ❖ Family history of lung cancer 肺癌家族病史
- ❖ Past cancer treatment 过往癌症病史
- ❖ Previous smoking related cancer (tobacco products)
曾患有与吸烟相关的癌症（烟草制品）
- ❖ Lowered immunity (AIDS, HIV)
免疫力低下（艾滋病，HIV）

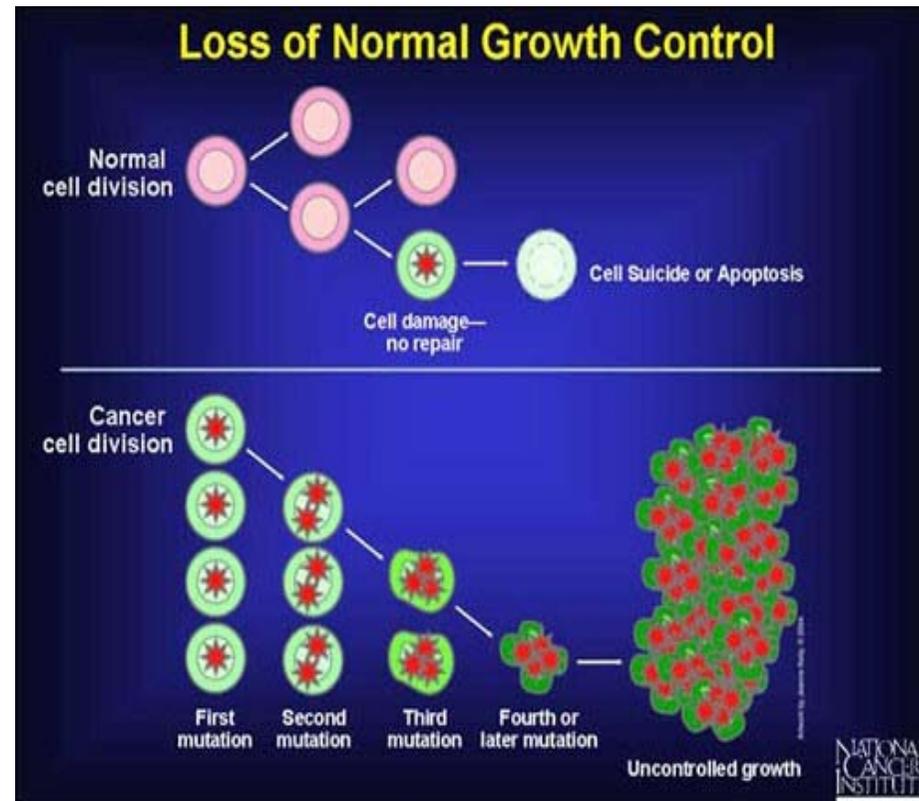
CELLS 细胞

Are damaged and mutate
受损并发生变异

Grow and multiply uncontrollably
不受控制地增殖

Clump together and form a tumor
聚集成团形成肿瘤

细胞增殖失控

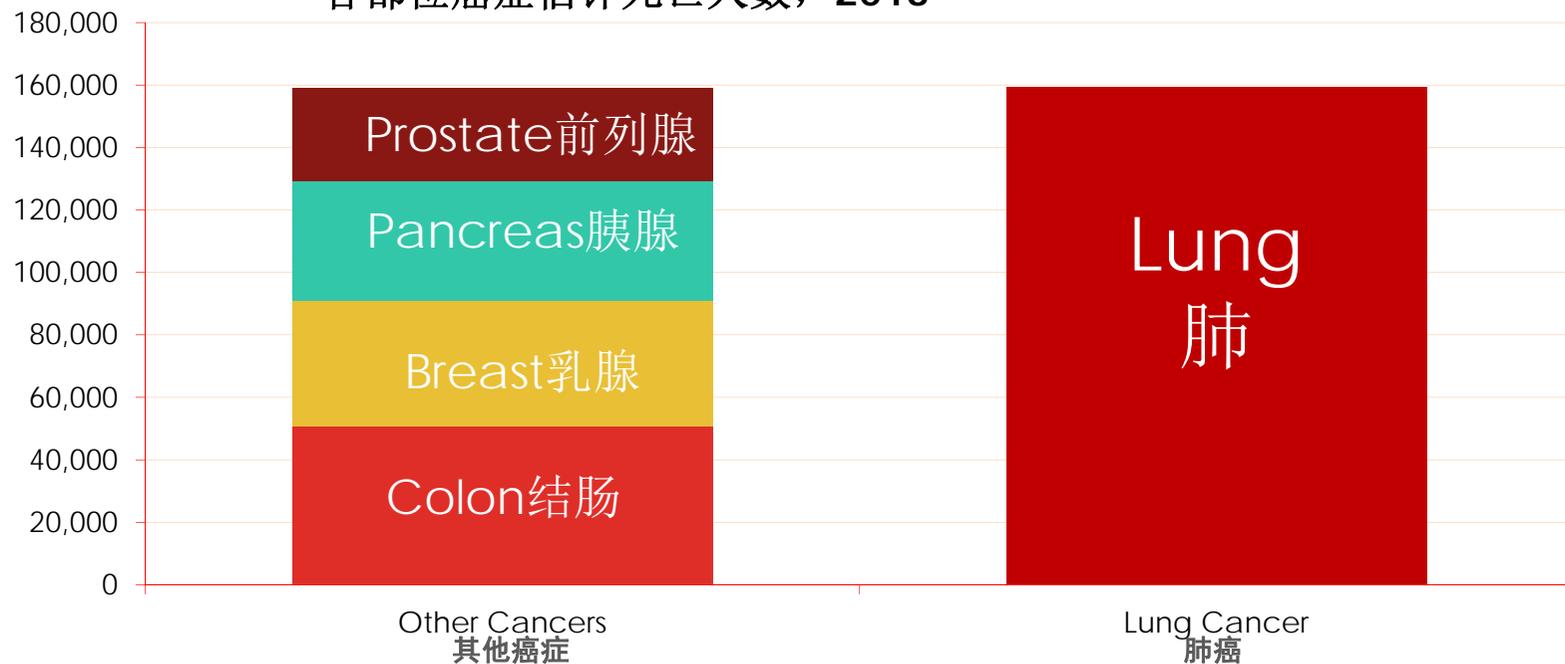


LUNG CANCER IS THE DEADLIEST CANCER

肺癌是死亡率最高的癌症

Estimated Cancer Deaths by Site, 2013

各部位癌症估计死亡人数，2013

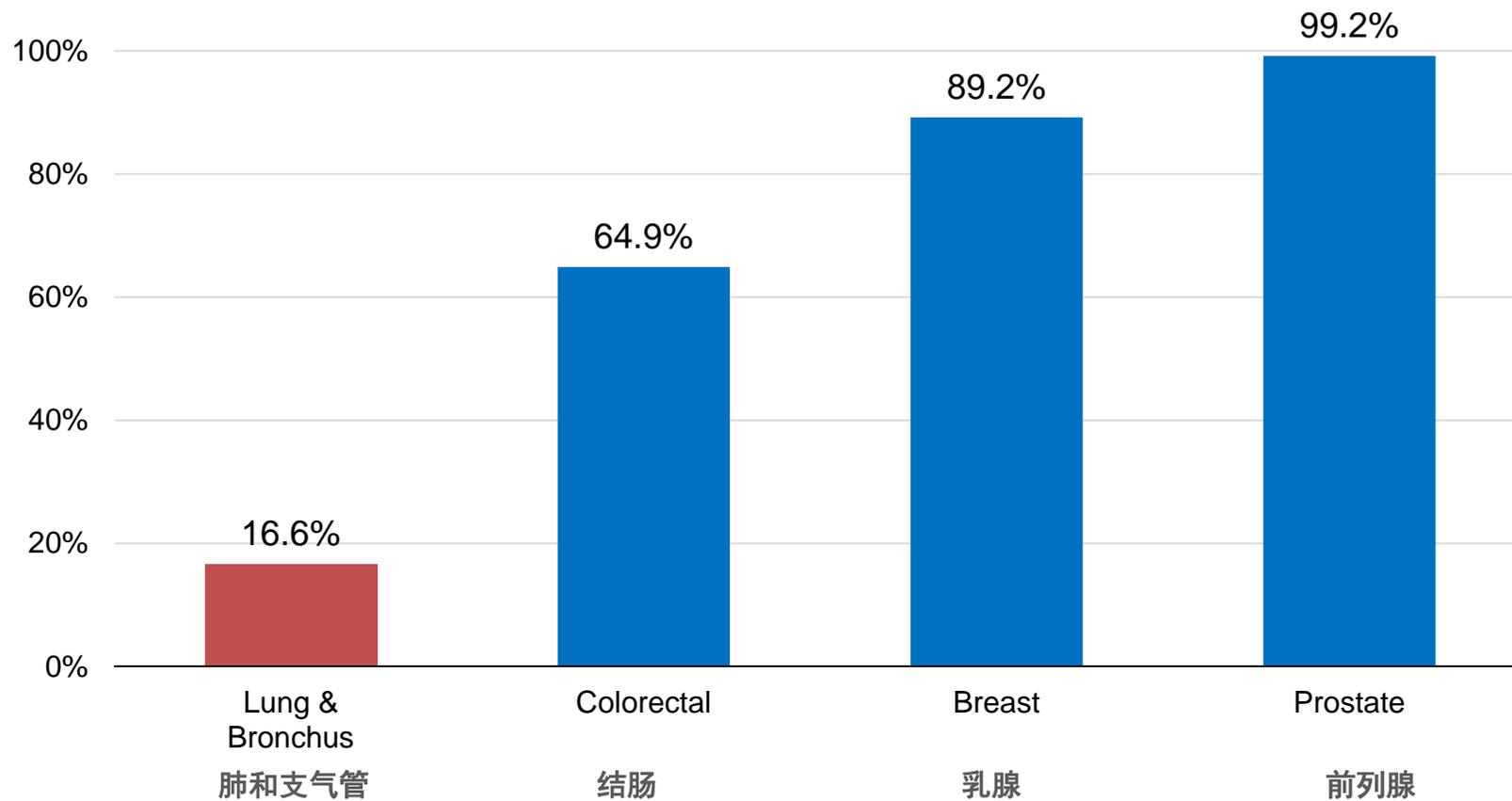


Source: American Cancer Society. Cancer Facts & Figures 2013

MOST LUNG CANCER IS CAUSED BY SMOKING (*THE NUMBER OF SMOKERS ARE DECREASING, THE INCIDENCE OF LUNG CANCER IS INCREASING)

多数肺癌是吸烟导致的（吸烟者人数在减少，而肺癌发病率却在增加）

5 YEAR SURVIVAL RATES 五年生存率



AIR POLLUTION & CLEAN AIR ACT 1970

1970年空气污染及清洁空气法案

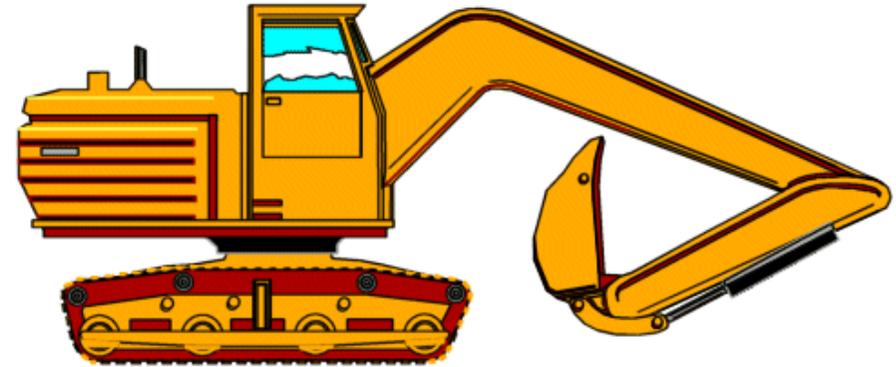


- Created Environmental Protection Agency
设立环保署
- EPA required to establish air quality standards
要求环保署制订空气质量标准
 - ✓ 6 Criteria pollutants 六种主要污染物
(ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter, and lead 臭氧, 一氧化碳, 二氧化氮, 二氧化硫, 颗粒物和铅)
 - ✓ Climate change pollutants (CO₂) 气候变化污染物 (二氧化碳)
 - ✓ Toxic air pollutants (carcinogens) 有毒气体污染物 (致癌物)
- Time lines to comply
遵循时间表

WHO MUST COMPLY? 谁必须遵循法案?



- Mobile Sources 移动污染源 (manufacturers 制造商)
 - ✓ On road 道路行驶车辆
 - ✓ Off road 非路面行驶车辆
 - ✓ Planes 飞机
 - ✓ Trains 火车
 - ✓ Small engines 小型发动机
- Chemical Products 化学制剂



NOT HOMES OR PEOPLE (DIRECTLY)!

不直接约束家庭和个人！

No federal laws mandating 联邦法律并无强制规定的：
Recycling, reuse, energy, chemical, vehicle choice or fuel usage
资源回收、再利用、能源、化学品，车辆购置选择和燃油使用



WHERE DOES OZONE COME FROM?

臭氧从何而来?

Primordial Ozone Soup

原始臭氧汤



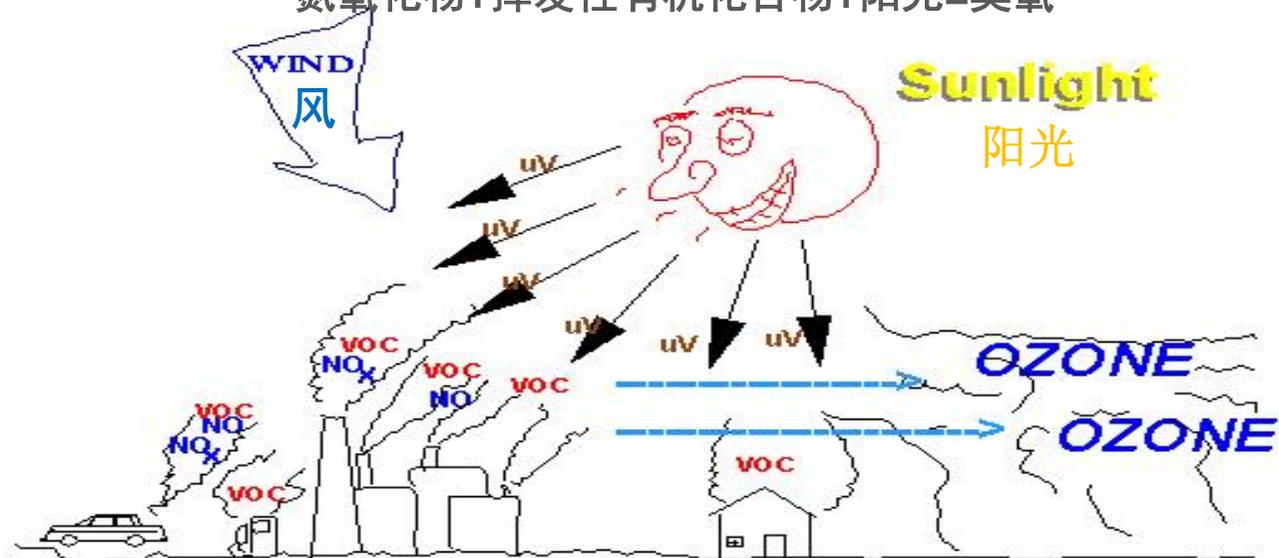
氮氧化物+挥发性有机化合物=臭氧

HOW VOCs AND NO_x FORM GROUNDLEVEL OZONE

挥发性有机化合物和氮氧化物是如何形成地表臭氧层的



氮氧化物+挥发性有机化合物+阳光=臭氧



PARTICULATE MATTER 颗粒物

- Natural & industrial
自然及工业来源
- PM 10 – PM 2.5 micron 微米
- Health effects 对健康的影响
 - ✓ Bronchioles 1-5 m 细支气管
 - ✓ Lung & heart 肺和心脏
- Environmental effects 环境影响
 - ✓ Haze & smog 雾霾和烟尘
 - ✓ Water acidity 水体酸化
 - ✓ Damage to crops 破坏作物
 - ✓ Effects on ecosystems 影响生态系统



Health and Environmental Effects - National Data

健康和环境影响 — 全国数据

- Population = 313,914,040
- 人口 = 313,914,040
- Pediatric Asthma = 6,562,142
- 小儿哮喘 = 6,562,142例
- Adult Asthma = 21,272,415
- 成人哮喘 = 21,272,415例
- COPD = 15,340,484
- 慢性阻塞性肺病 = 15,340,484例
- Lung Cancer = 196,818
- 肺癌 = 196,818例



Carbon Monoxide 一氧化碳
74% from Mobile Sources
74%来源于移动源

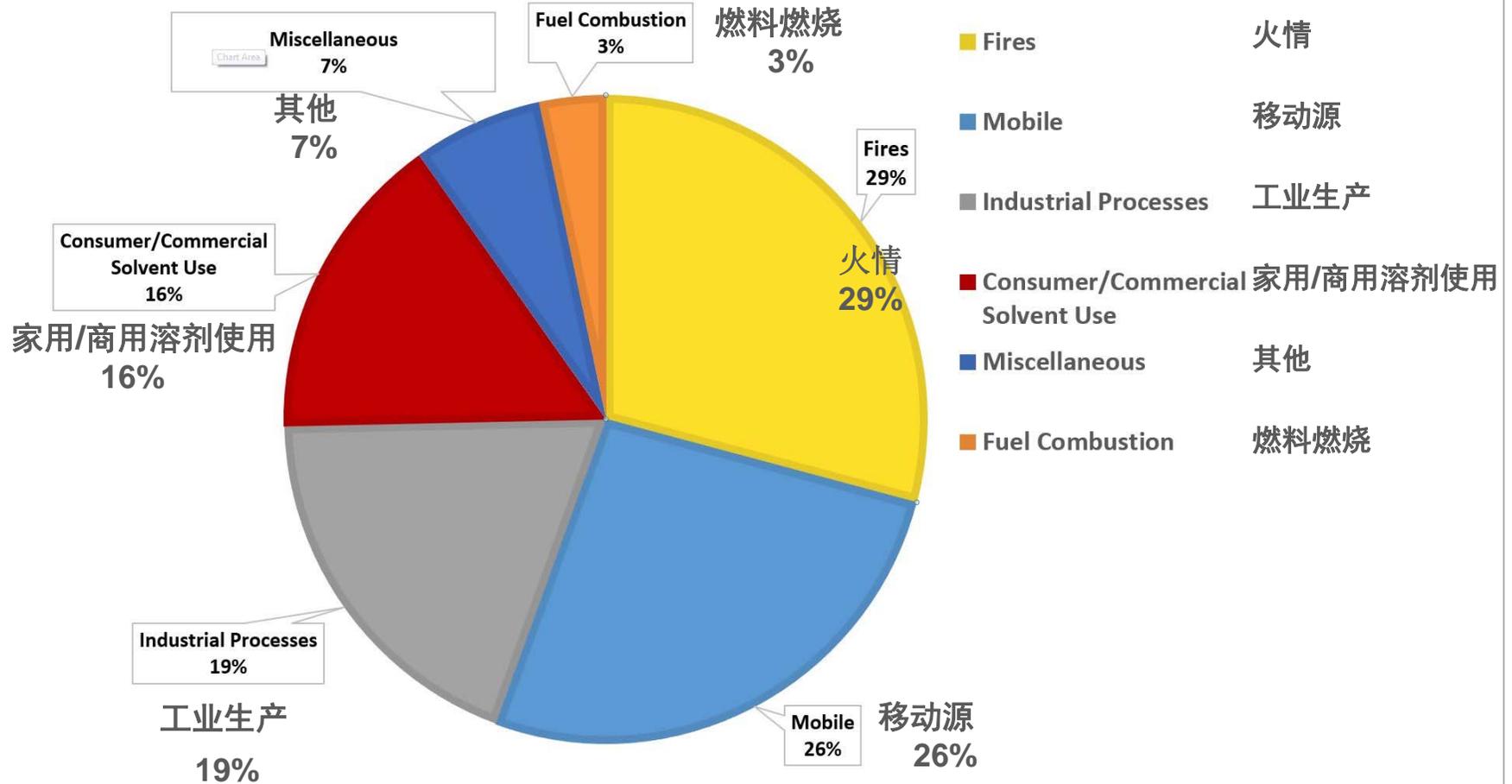
Nitrogen oxides 氮氧化物
59% from Mobile Sources
59%来源于移动源
25% from Fuel Combustion
25%来源于燃料燃烧

Sulfur Dioxide 二氧化硫
87% from Mobile Sources
87%来源于移动源

Lead 铅
60% from Mobile Sources
60%来源于移动源
28% from Industrial processes
28%来源于工业生产过程

U.S. HYDROCARBONS EMISSIONS BY SECTOR

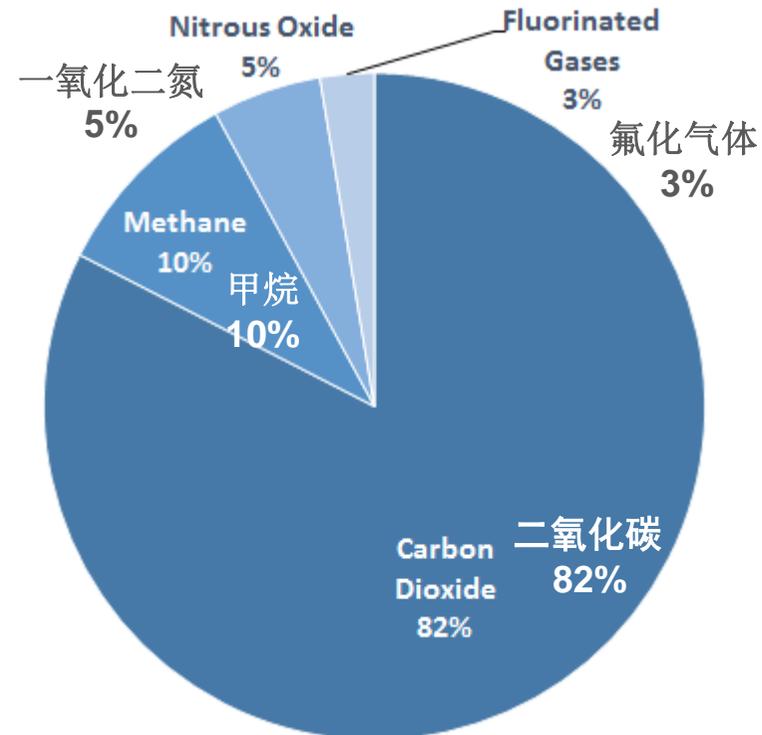
美国各领域碳氢化合物排放情况



CLIMATE CHANGE & GREENHOUSE GASES

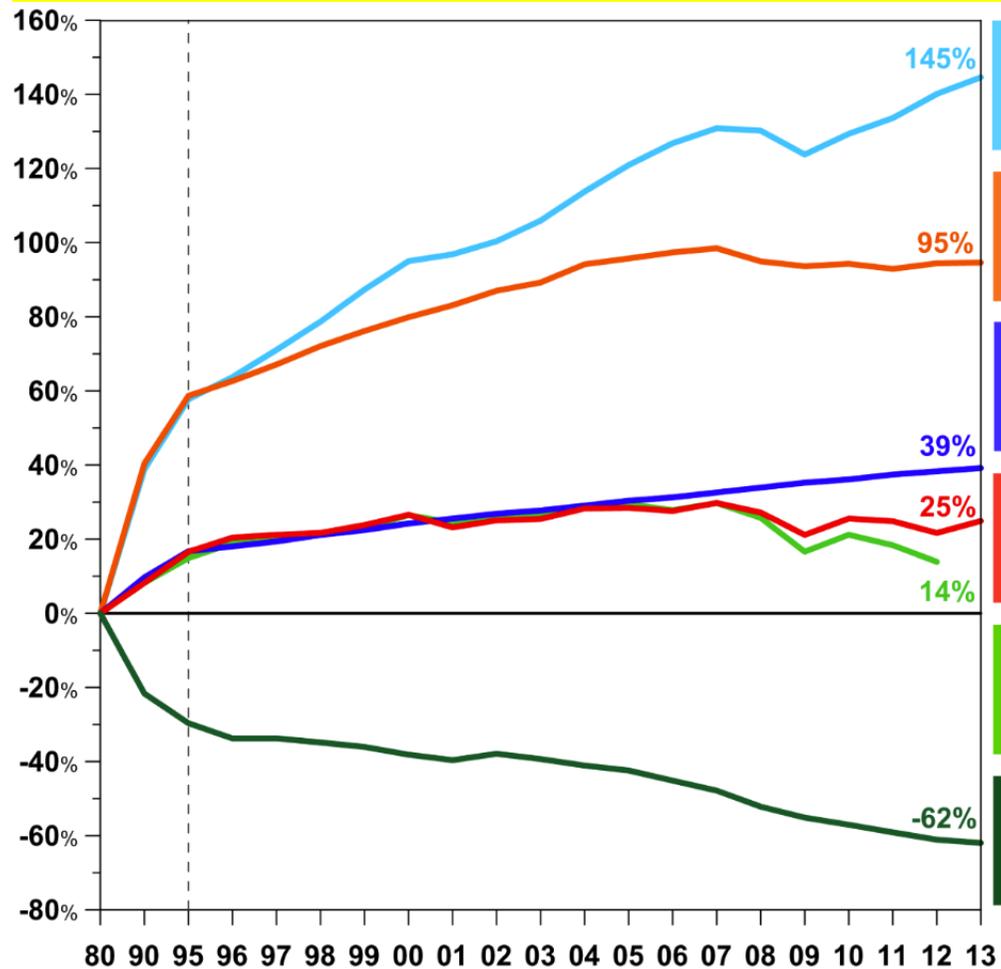
气候变化和温室气体

- Carbon dioxide –burning of fossil fuels (coal, natural gas, and petroleum fuels)
- 二氧化碳-化石燃料燃烧产生（煤炭，天然气和石油）
- Result of chemical reactions (mfg of cement)
- 化学反应的结果（水泥制造）
- Usually removed by plants as a part of biological carbon cycle
- 通常可被植物通过生态碳循环吸收
 - ✓ except when an excess
 - ✓ 二氧化碳过量的情形除外



CLEAN AIR ACT PROGRESS

清洁空气法案进展



Gross Domestic Product
国内生产总值



Vehicle Miles Traveled
车辆行驶里程



Population
人口



Energy Consumption
能源消耗



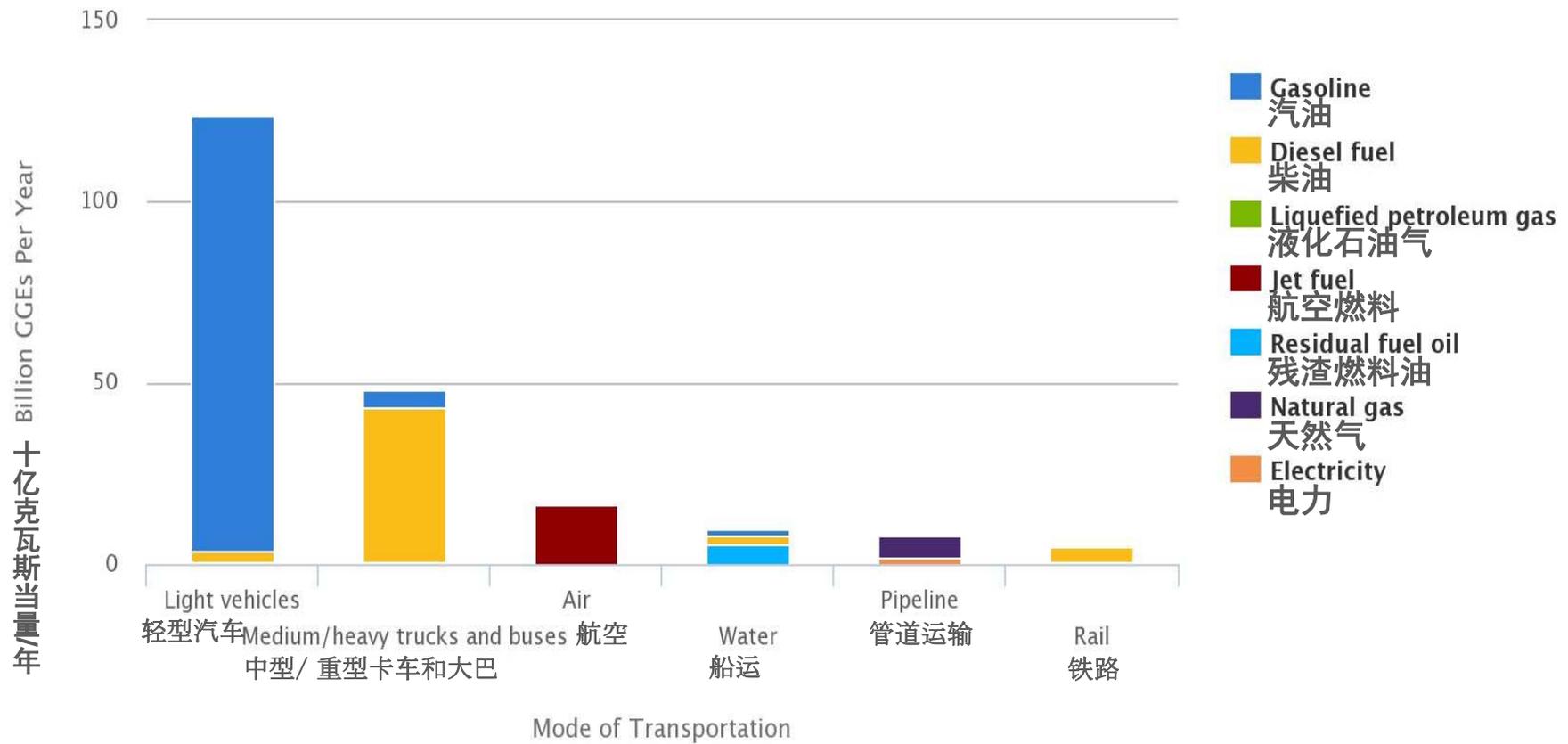
CO₂ Emissions
二氧化碳排放



Aggregate Emissions
(Six Common Pollutants)
总排放 (六种常见污染物)

TRANSPORTATION ENERGY USE BY MODE AND FUEL TYPE

按燃料类型和运输方式看交通能源消耗



MOBILE SOURCE EMISSIONS

移动源排放

- Exhaust emissions
尾气排放
- Evaporative emissions
(hot days>cold days)
- 蒸发排放（炎热天气>寒冷天气）
- Trip emissions
- 行驶排放
(average trip = 7 miles X 7 times day)
(平均每次行驶 = 7英里 X 每天7次)
 - ✓ Variable emissions – speed
排放量可变因素 – 车速
 - ✓ Variable emissions - age
排放量可变因素 – 车龄
- Refueling emissions (area source)
加油时的排放（局部区域）



MOBILE SOURCE CLEAN AIR RULES

移动源清洁空气规定

- ❖ Clean Cars and Passenger Trucks –Tier 3
清洁汽车和载人卡车 – 三级
- ❖ Clean Heavy-Duty Trucks and Buses 清洁重载卡车和大巴
- ❖ Mobile Source Air Toxics Rule 移动源空气污染规定
- ❖ Clean Non-road Diesel Engines and Equipment
清洁非道路柴油机和设备
- ❖ Locomotive and Marine Diesel Standards 机车和船用柴油标准
- ❖ Ocean-going Vessels 远洋船舶
- ❖ Small Gasoline and Recreational Marine Standards
小型汽油船和游艇标准
- ❖ Ultra-low Sulfur Fuel Requirements 超低硫燃料要求
- ❖ Renewable Fuel Standards 可再生燃料标准

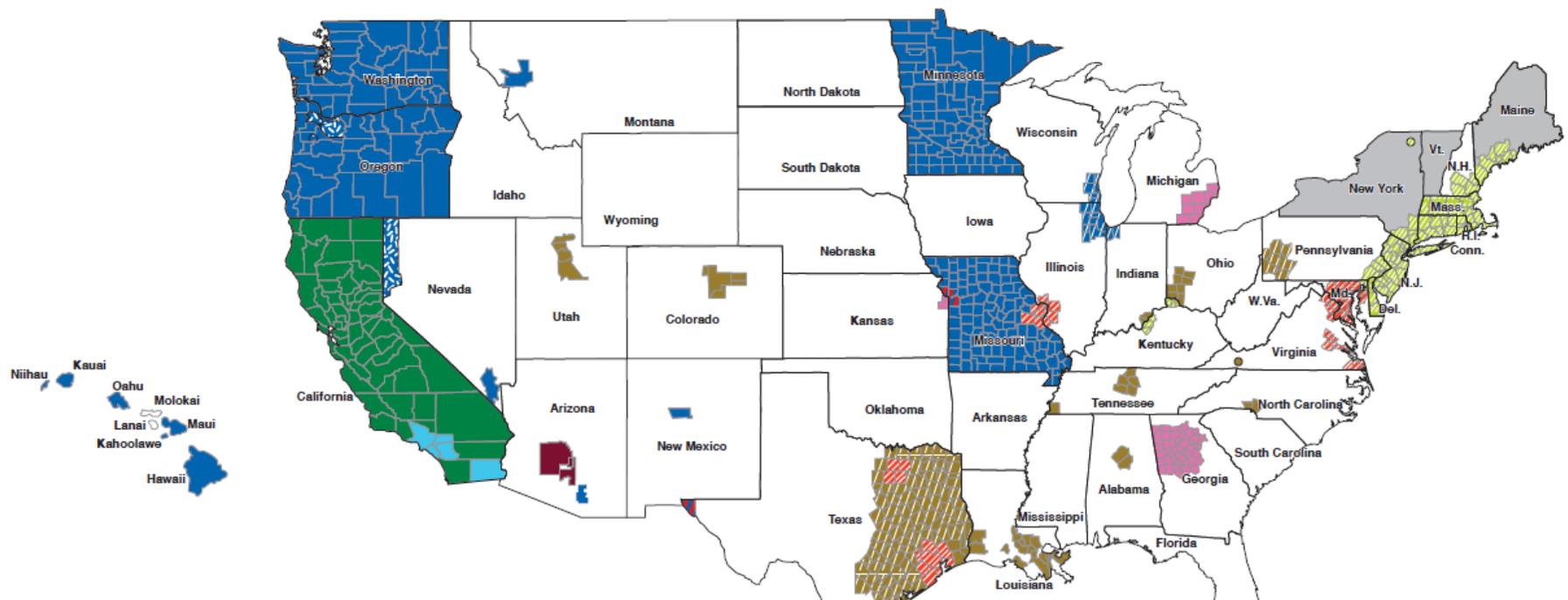
A new vehicle today is up to 95% percent cleaner than a new vehicle in 1970. Still, by 2020, mobile sources are projected to account for up to 50% of the NO_x emissions, and substantial hydrocarbon and PM emissions.

如今一辆新车比1970年的新车清洁度高达95%。可是，到2020年，移动源仍占氮氧化物排放的50%，碳氢化合物和颗粒物的排放量也很可观。





U.S. Gasoline Requirements 美国各地汽油要求



- | | |
|--------------------------|--|
| Oxygenated Fuels | CHI/MIL RFG w/Ethanol |
| CA RFG | N RFG w/Ethanol |
| CA OXY RFG | S RFG w/Ethanol |
| AZ CBG | 7.0 Summer RVP |
| Oxy Fuels/7.8 Summer RVP | 7.8 Summer RVP |
| Oxy Fuels/7.0 Summer RVP | 7.8 Summer RVP No 1 psi EtOH Allowance |
| Conventional | Conv, No 1 psi EtOH Allowance |

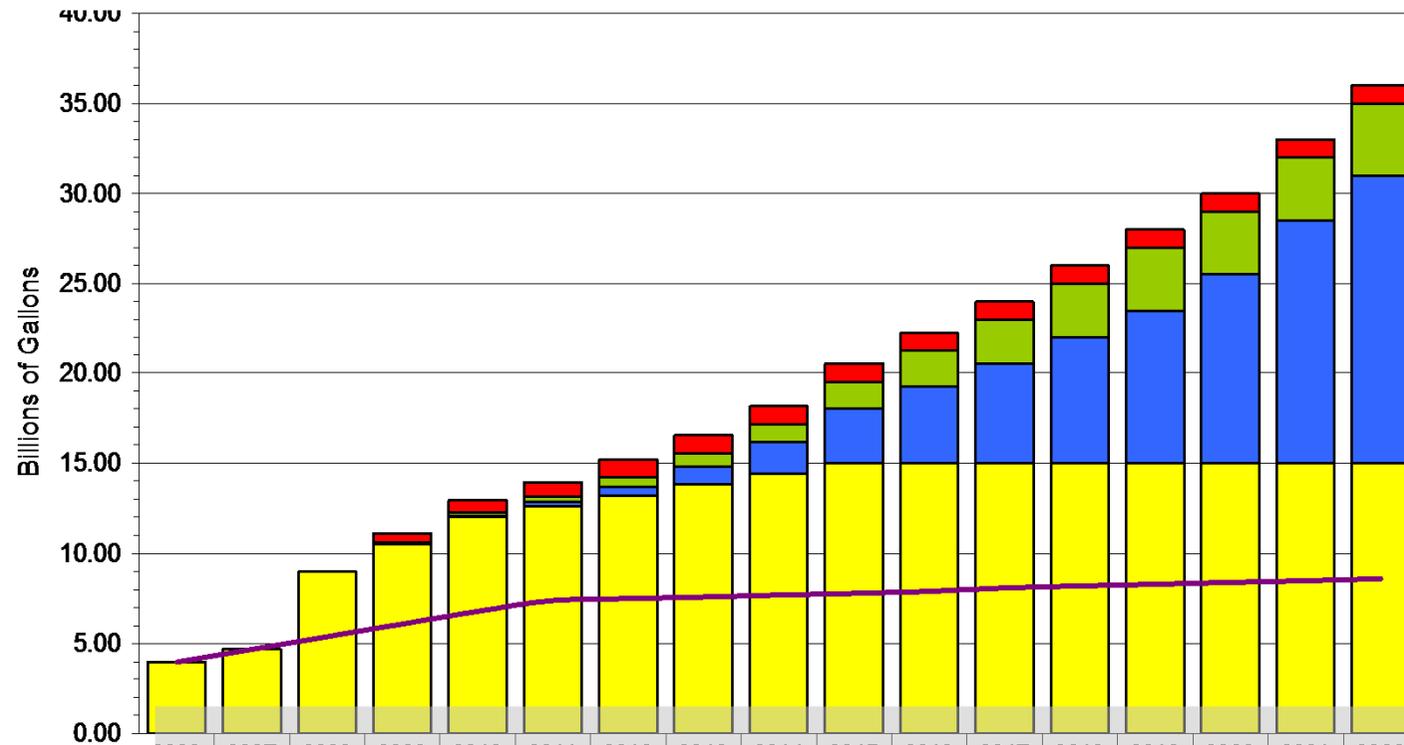
ExxonMobil
As of June, 2015

This map is not intended to provide legal advice or to be used as guidance for state and/or federal fuel requirements, including but not limited to oxy fuel or RFG compliance requirements. ExxonMobil makes no representations or warranties, express or otherwise, as to the accuracy or completeness of this map.

K.W. Gardner
IN# 52715

RENEWABLE FUEL STANDARDS 2007-2022

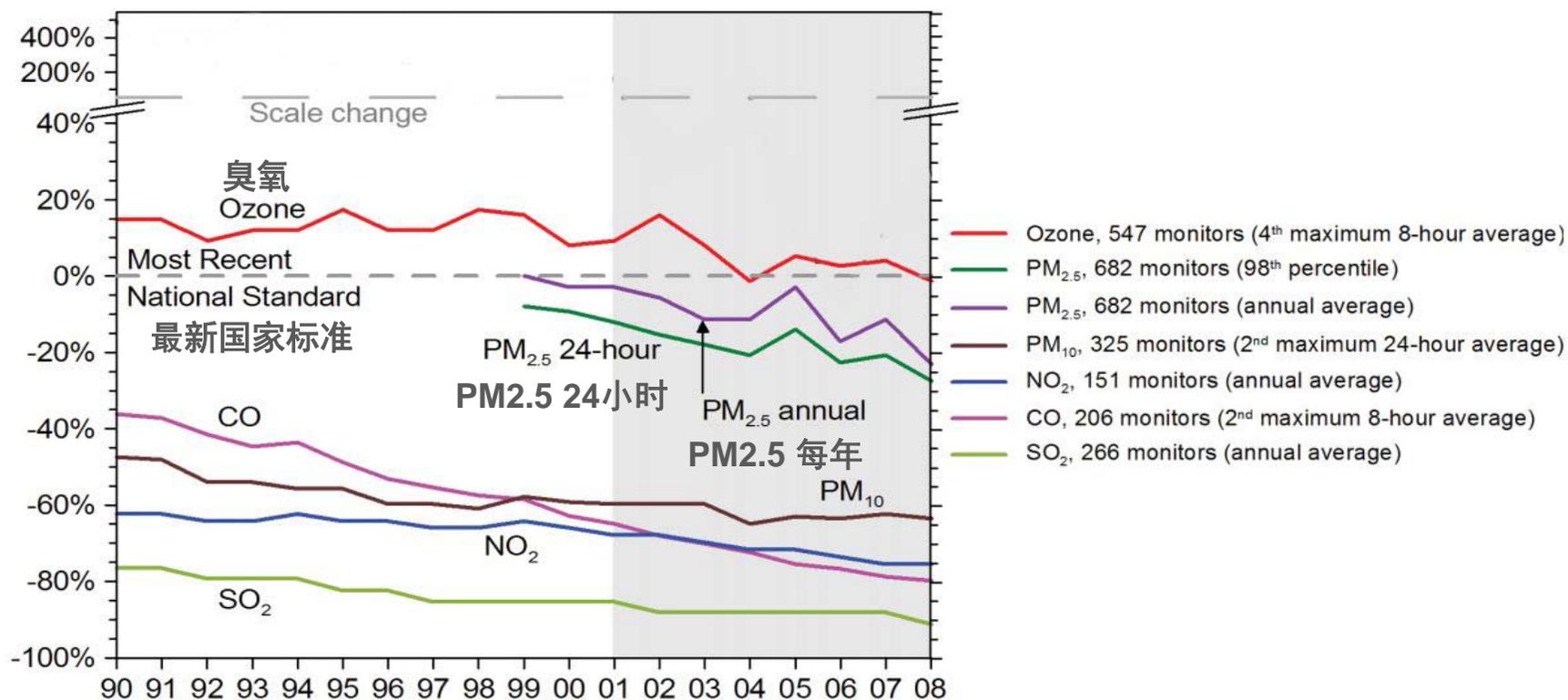
可再生燃料法 2007-2022



	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Biomass-based Diesel 生物质柴油				0.50	0.65	0.80	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Balance of Advanced 先进燃料				0.10	0.20	0.30	0.50	0.75	1.00	1.50	2.00	2.50	3.00	3.50	3.50	3.50	4.00
Celulosic Advanced 先进纤维素乙醇				0.10	0.25	0.50	1.00	1.75	3.00	4.25	5.50	7.00	8.50	10.50	13.50	16.00	
Conventional Biofuels 传统生物燃料	10.50	12.00	12.60	13.20	13.80	14.40	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Current RFS PL 109-58	4.00	4.70	5.40	6.10	6.80	7.40	7.50	7.60	7.70	7.80	7.90	8.10	8.20	8.30	8.40	8.50	8.60

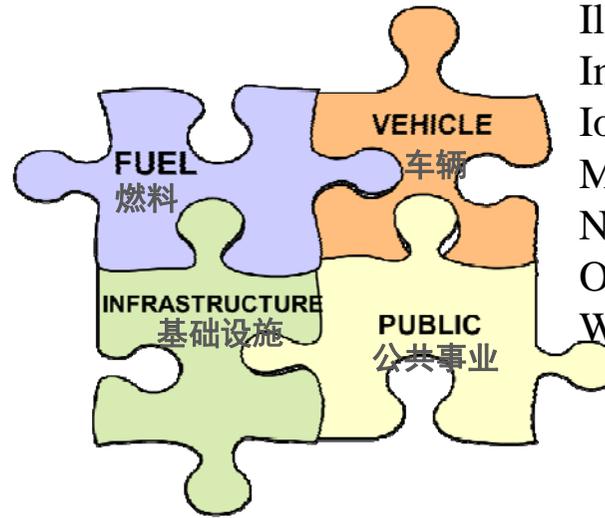
COMPARISON OF CRITERIA POLLUTANT LEVELS TO AIR QUALITY STANDARDS (1990-2008)

空气质量标准，污染物指标的比较（1990 – 2008）



PROGRAM EFFORTS 项目举措

1. Infrastructure Grants
基础设施补贴
2. GIS Station Mapping
地理信息系统地图
3. Environmental & Health
环境与健康
4. Benefits 福利
5. Website 网站
6. Auto manufacturers
汽车制造
7. IL E85 Coupon Program
伊利诺伊E85优惠项目
8. FFV Dealership Coupon
灵活燃料汽车经销商优惠券



Illinois 伊利诺伊
Indiana 印第安纳
Iowa 艾奥瓦
Minnesota 明尼苏达
Nebraska 内布拉斯加
Ohio 俄亥俄
Wisconsin 威斯康星



2016 USDA BIOFUELS INFRASTRUCTURE GRANTS

2016年美国农业部生物燃料基础设施补贴

- ❖ Government provided \$100 M in grants
政府提供一亿美元补贴款
- ❖ 1:1 matching dollars 1:1配套投资
 - ✓ Stations 加油站
 - ✓ Partners (state and private) 合作伙伴（州和私营）
- ❖ \$200 M in ethanol infrastructure
乙醇基础设施投入两亿美元
- ❖ 5000 Additional pumps providing ethanol
增加5000台乙醇加油泵
- ❖ 1400 Fueling stations
1400间加油站



REFORMULATED GAS SUBSTANTIALLY REDUCES HARMFUL GASOLINE EMISSIONS

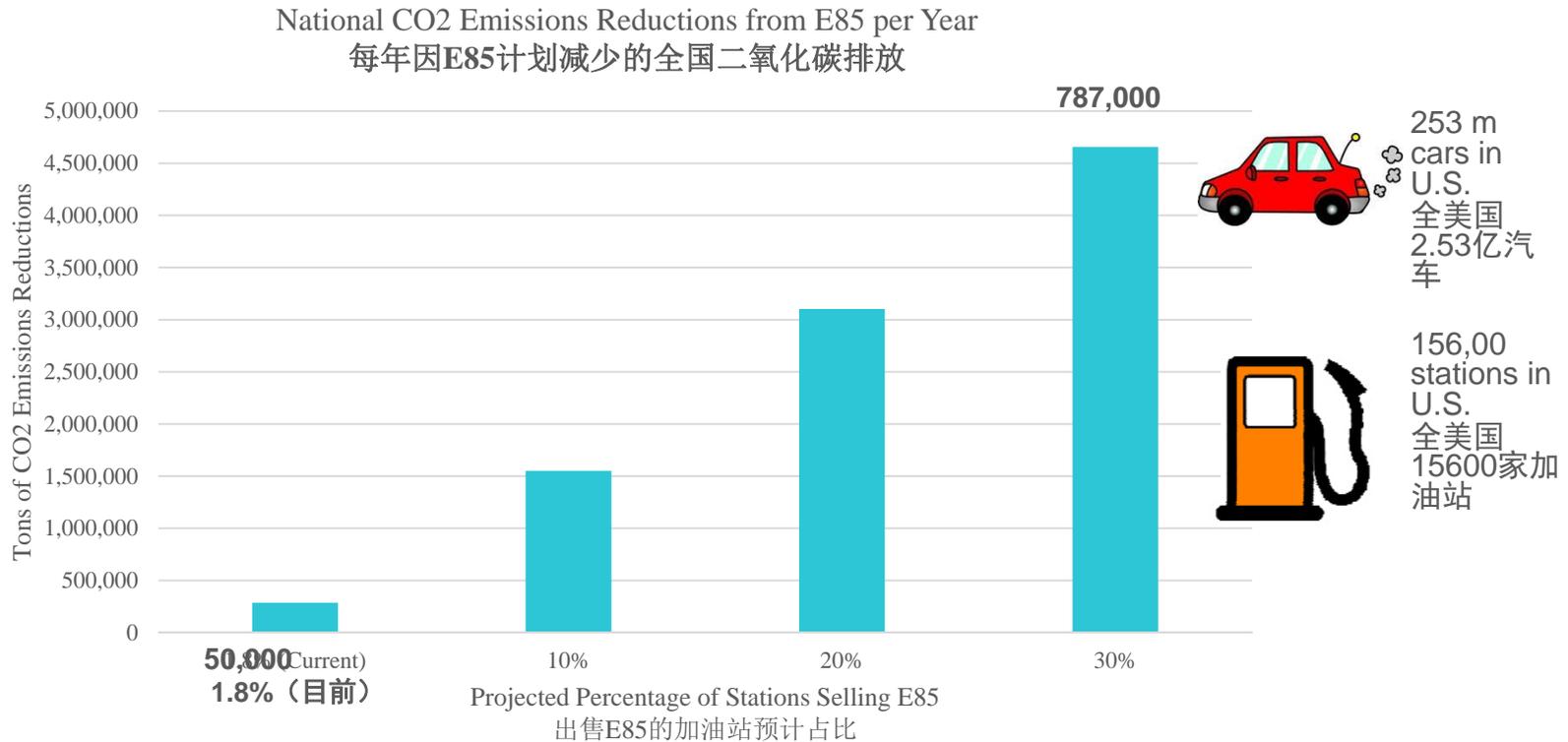
新配方汽油有效地降低了汽油的有害气体排放

The Health Benefits of Ethanol: C. Boyden Gray
乙醇对健康的益处: C. Boyden Gray

Air Toxics 毒性空气污染物	-28%
Volatile Organic Compounds 挥发性有机化合物	-17%
Nitrogen Oxides 氧化氮	-3%
Carbon Monoxide 一氧化碳	-13%
Sulfur Oxides 硫氧化物	-11%
Carbon Dioxide 二氧化碳	-4% (-30%)
Particulate Matter 颗粒物	-9% (-50% for fine PM)
Reduced Cancer Risk 降低癌症风险	-20 – 30%

NATIONAL CO2 EMISSIONS REDUCTIONS FROM E85

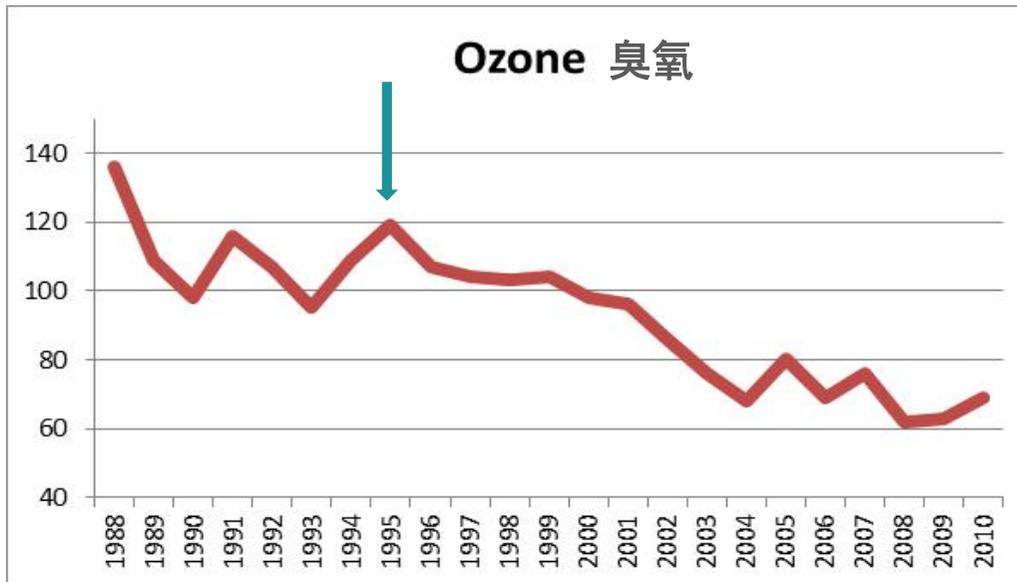
因E85计划减少的全国二氧化碳排放



- **2,816** stations selling E85, which makes up only **(1.8%)** of the total active stations in U.S.)
- 2,816家加油站出售E85，仅占全美国营业加油站的1.8%。
- **285,627** tons of CO2 emissions reductions per year (less **50,000** cars off the road each year)
- 每年减少285,627吨二氧化碳排放（等于每年路面上减少五万辆汽车）
- **4,500,000 tons per year** (less **787,000** cars) if **30%** of stations sell E85
- 如果30%的加油站出售E85，每年将减少4,500,000吨排放（等于减少787,000辆汽车）。

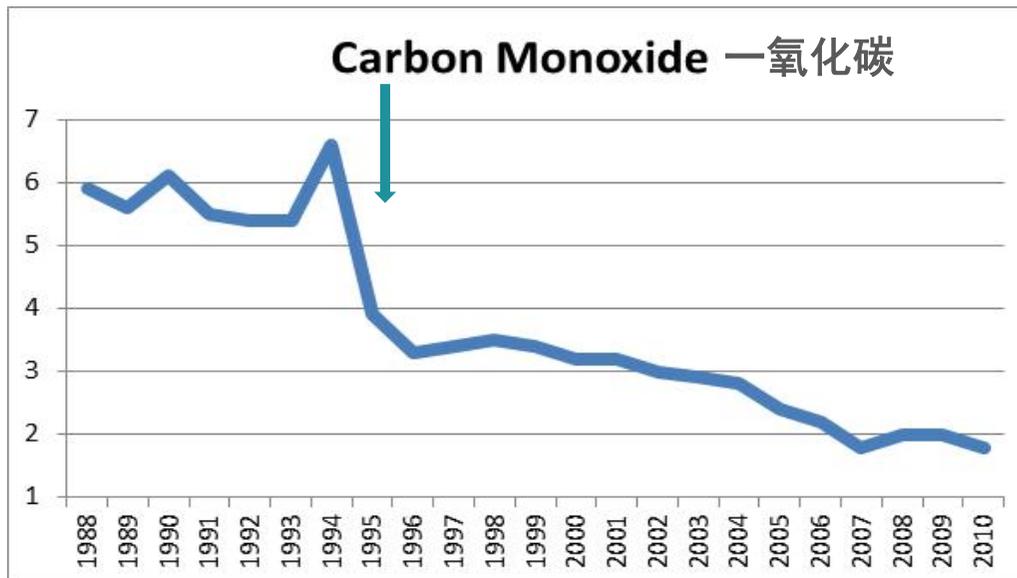
CONTINUOUS AIR QUALITY MONITORING IN ILLINOIS

伊利诺伊州空气质量连续监测



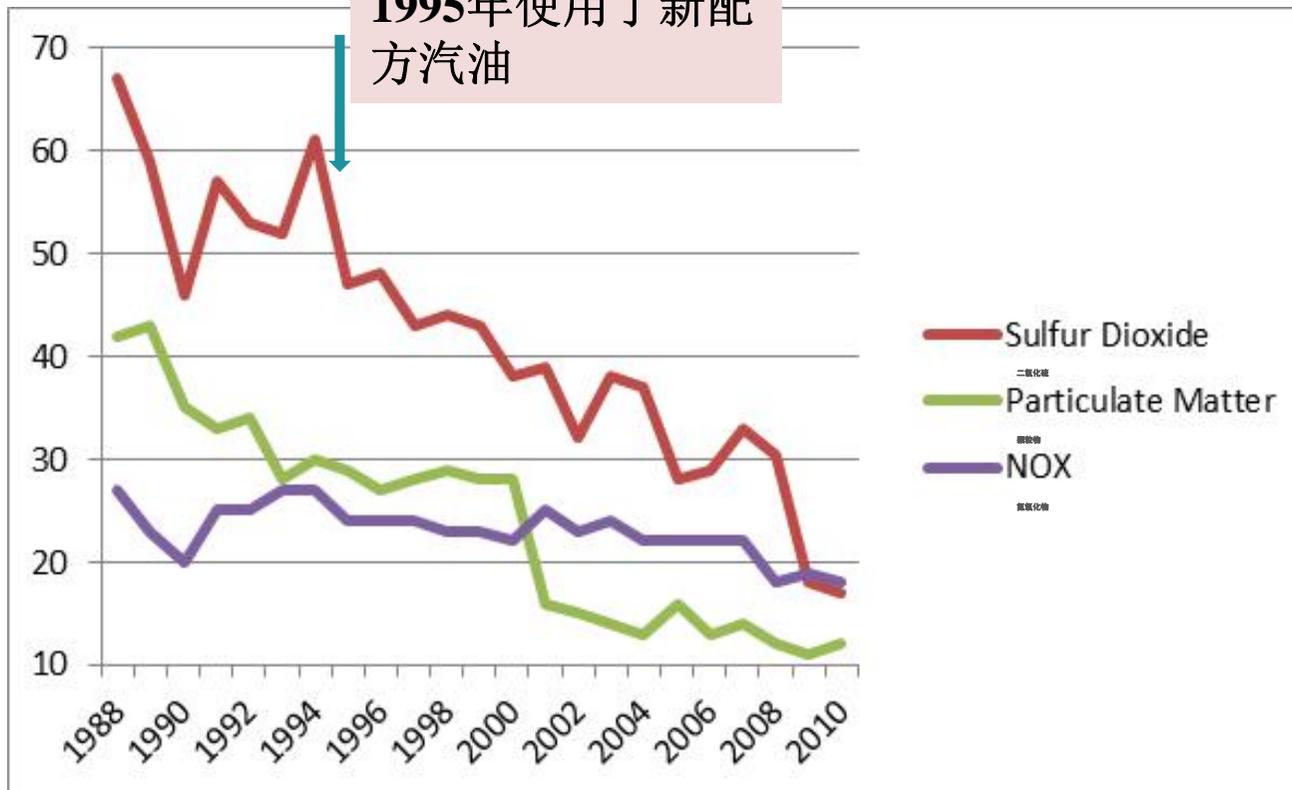
**Reformulated
Gas in 1995**
1995年开始使用
新配方汽油

31% Decrease in
Carbon Monoxide
一氧化碳减少了31%



Continuous monitoring at
80 monitoring sites with
more than 200 instruments
在80个监测站点使用超过
200件仪器进行持续监测

**Reformulated Gas
in 1995**
1995年使用了新配
方汽油



25%
Decrease
减少25%

29%
Decrease
减少29%

67%
Decrease
减少67%

With the removal of lead from gasoline,
there is almost no lead in either the air or water
自从将铅从汽油中去除，空气和水体中几乎不含铅

SUMMARY 摘要

- The Clean Air Act has been successful in dramatically reducing air pollution in the United States.
- 清洁空气法案成效显著，大幅减少了美国的空气污染。
- Reduction in pollution from all types of motor vehicles has been critical to meeting air quality goals.
- 各种机动车污染排放减少对空气质量目标的达成起关键作用。
- Regulation of motor vehicle fuels at the national level, combined with local fuel requirements, has brought many areas to within health-based air quality standards.
- 有关机动车燃料的国家级法规与地方燃料要求结合，使很多地区的空气质量达到了健康标准。
- Use of oxygenates in fuels, primarily ethanol, has been an important component of fuels programs in the U.S.
- 在燃料中添加增氧剂，主要是乙醇，是美国燃料计划的重要组成部分。
- Ethanol will provide a strong role in national fuels programs in the future, including efforts to address GHG emissions.
- 乙醇在未来国家燃料计划中的作用至关重要，包括温室气体排放治理。

WHY WE ARE INVOLVED? 我们为何参与?

- ❖ To work in area of most harm (mobile sources)
- ❖ 在危害最大的领域方面开展工作（移动源污染）
- ❖ To reduce air emissions & promote good lung health
- ❖ 减少空气排放并促进肺部健康
- ❖ Ethanol blended fuel 添加乙醇的燃料
 - ✓ Renewable – sustainable fuel
 - ✓ 可再生 – 可持续燃料
 - ✓ Non toxic, water soluble & biodegradable (all media)
 - ✓ 无毒性，可溶于水并且能够生物降解（所有媒介）
 - ✓ Positive environmental benefits
 - ✓ 良性的环境效益
 - ✓ No environmental harm from accidental releases
 - ✓ 意外泄漏时对环境无害
 - ✓ No environmental harm compared to oil exploration or natural gas drilling
 - ✓ 与石油开采和天然气钻探相比不会损害环境

[VIDEOS\CLEARING THE AIR ON THE ETHANOL VS. GASOLINE DEBATE - YOUTUBE \[720P\].MP4](#)







clean air choice™

† AMERICAN LUNG ASSOCIATION®
OF THE UPPER MIDWEST

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* www.CleanAirChoice.org *
www.E85Coupon.com *

