Removing Lead from Petrol

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Crime Rates Dropping.....Why?

FIGURE 1.
Crime Rate in the United States, 1960–2012
After being particularly elevated during the 1970s and 1980s, the crime rate fell nearly 45 percent between 1990 and 2012.

Sources: DOJ 2010b; authors’ calculations.
Note: The crime rate includes all violent crimes (i.e., aggravated assault, forcible rape, murder, and robbery) and property crimes (i.e., burglary, larceny-theft, and motor vehicle theft).
Production Leaded Gasoline in the US 1920-1990

Chicago – Crime vs Lead

Trends in lead pollution, assault rates in Chicago

Sources: Howard Mielke, Tulane University School of Medicine, Sammy Zahran, Colorado State University

@ChiTribGraphics
Crime Rates vs Leaded Petrol (US)

**Lead exposure and violent crime, USA**

Gasoline lead tonnes per 3,000 population  
Violent crimes per 100,000 population

Source: R. Nevin
Not only in the US...

**Preschool blood lead levels...**

**Micrograms per deciliter**

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**United States**

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**Canada**

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**Britain**

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...and the crime rate 19 years later.

**Rate per 100 population**

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Crimes counted in the U.S. chart are murder, rape, aggravated assault, burglary, and theft — what experts call “index crimes.”

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Crimes in Canada and Britain charts are murder, rape, aggravated assault, burglary, threats, and assaults without injury, as well as thefts that fall below the U.S. threshold for an index crime. The crime rates — and scales — in these charts are higher than in the U.S. chart because they include more types of crime.
Lead Impacting IQ

DID LEAD MAKE YOU DUMBER?
Even low levels have a significant effect.

Blood lead level in µg/dL (children under 6)

IQ points
-25 -20 -15 -10 -5 0 10 20 30 40 50 60 70 80

Global Benefits

- GDP = $2.44 trillion / year
- IQ = 322,286,258 points/year
- Adult mortality = 1,089,028 premature deaths/year
- Child mortality = 125,403 premature deaths/year
- Crime = 58,691,014 cases/year

Source: Hatfield and Tsai, California State University, 2010
Partnership for Clean Fuels and Vehicles

- Governments
- Industry (oils & vehicles)
- Civil society
- Independent experts
- International organisations
- Secretariat at UN Environment
Baselines – Blood Lead Testing

![Ghana Blood lead levels](image)

- Lead in gasoline (g/l)
- Mean blood lead levels (ug/dl)

**Ghana Blood lead levels**

- Year 2003: Mean blood lead levels (ug/dl)
- Year 2006: Mean blood lead levels (ug/dl)

**Legend:**
- **Lead in gasoline (g/l)**
- **Mean blood lead levels (ug/dl)**
Awareness

- Improve your children's IQ.
- Double the life of your exhaust pipe.
- Save 80% on spark plugs.

Switch to unleaded petrol.
- Atmospheric lead from leaded petrol is causing a significant IQ loss in children.
- By eliminating lead, unleaded petrol allows children's minds to develop normally.
- Engine corrosion is minimized because acidity levels are much lower in unleaded petrol.
- By eliminating lead deposits on electrodes, unleaded petrol increases spark plug life by 80%.
Regional and National Support
countries went unleaded

2002

TODAY

Status as of End 2002

Unleaded
Ledaded
Lessons Learned – US Government

PCFV lead campaign success factors:
• Intervention design well-focused on its objectives
• Comprehensive composition of the Partnership
• Ability to support multi-level processes
• Approach tailored to available finance
• High quality management and staff
Partnerships Lessons - UN Environment

*Partnerships design principles:*

- Clear objectives and commonly agreed goals
- Timescale with milestones
- Early attention to high level political commitment
- Each partner makes a unique contribution and is essential for success
- Clear governance rules and structure
- Ability to listen and compromise
- Monitoring system for compliance