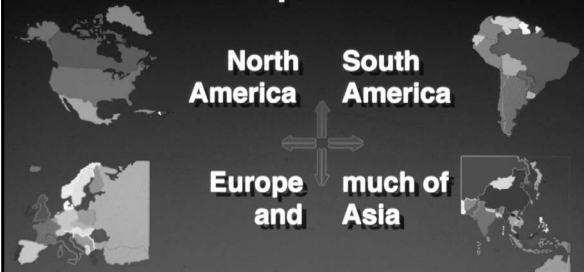


**Without chemicals,  
we would need the  
land area of both  
South and North America  
(15-16 million sq. miles)  
to produce today's  
food supply**



**Without chemicals,  
30-40 million sq. miles of land  
will be needed  
to feed  
a projected human population  
in the year 2050  
(8-12 billion people)**

**30 million sq. miles is  
land equivalent to**



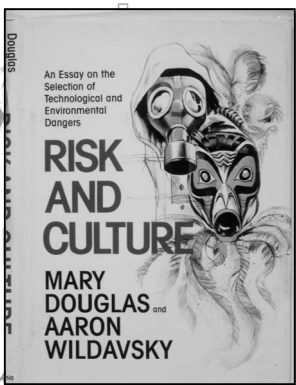
**“Moving now to a chemical-free  
agriculture on the basis of current  
knowledge, and thus forcing expansion  
of cropland to compensate for lower  
yields, would represent the greatest  
wildlife loss since the extinction of the  
dinosaurs.”**

**Dennis T. Avery  
Saving the Planet with Pesticides and Plastic**

An Essay on the  
Selection of  
Technological and  
Environmental  
Dangers

**RISK  
AND  
CULTURE**

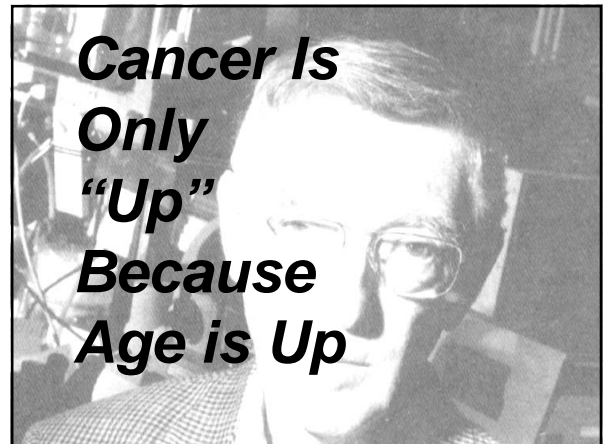
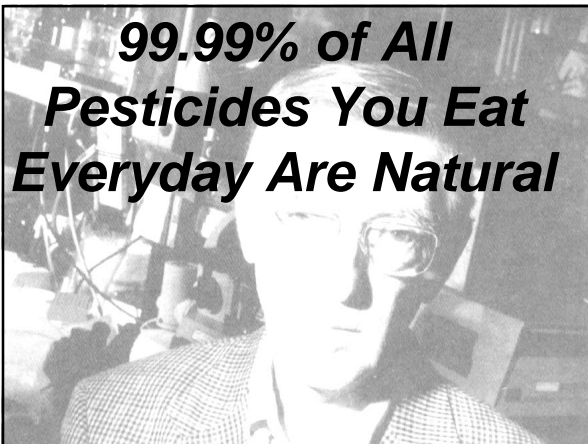
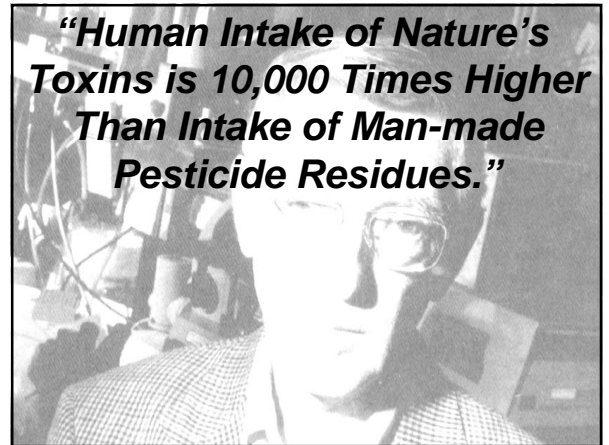
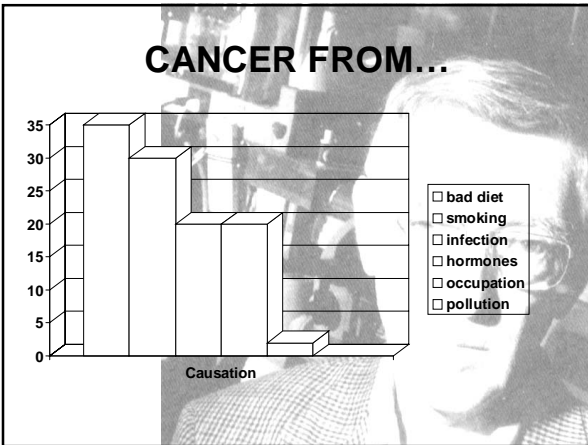
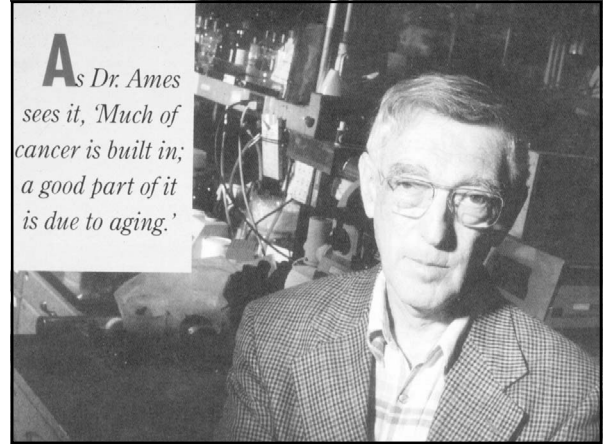
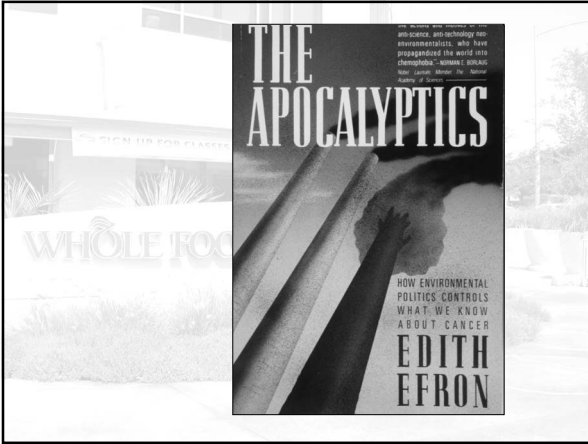
MARY  
DOUGLAS  
and  
AARON  
WILDAVSKY

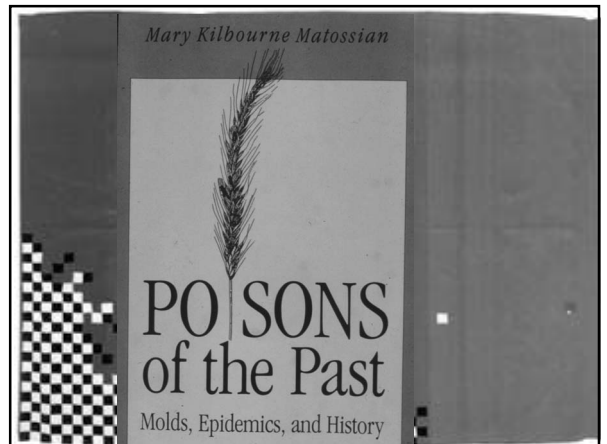
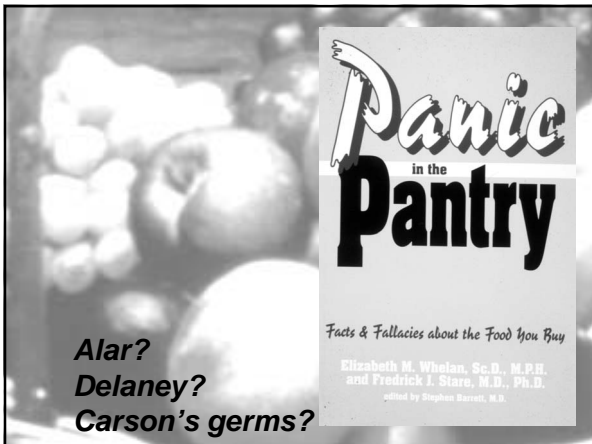
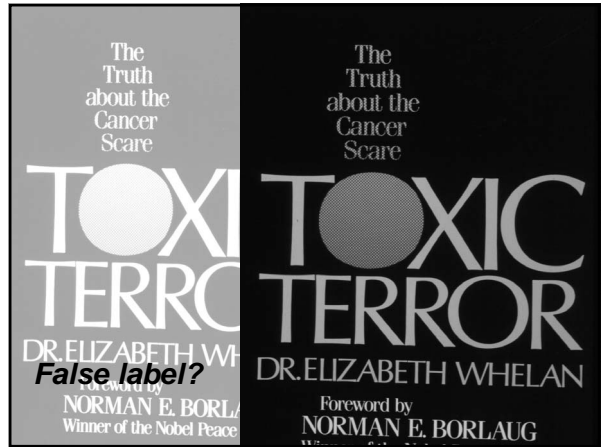
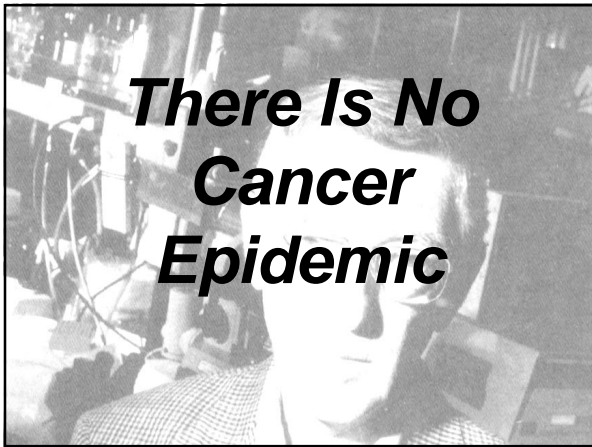
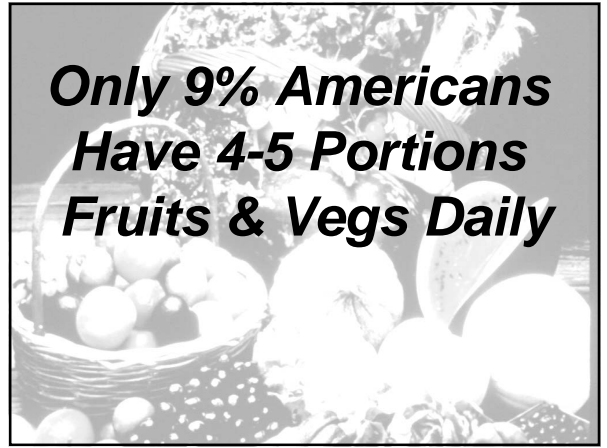


**“Of what are Americans fearful?**

- **Nothing much, really, except**
- **the food they eat,**
- **the water they drink,**
- **the air they breathe,**
- **the land they live on, and**
- **the energy they use.”**

**—M. Douglas & A. Wildavsky  
Risk and Culture**



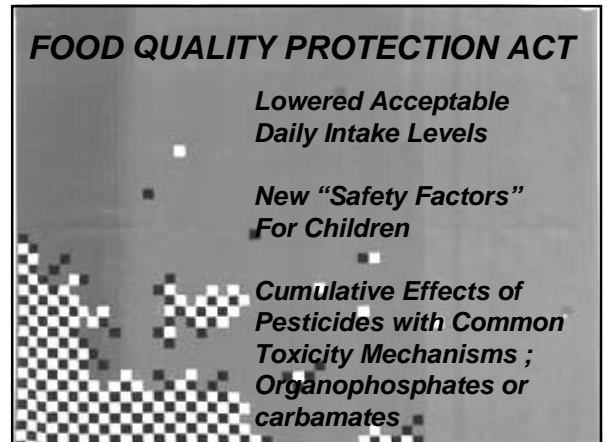
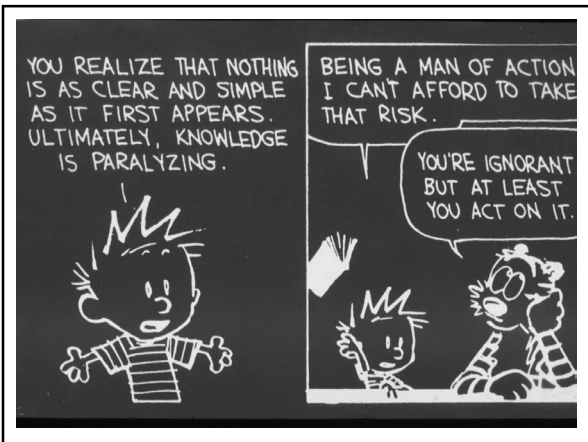
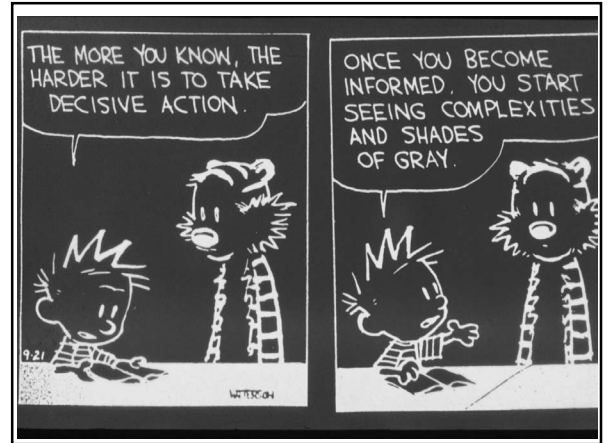
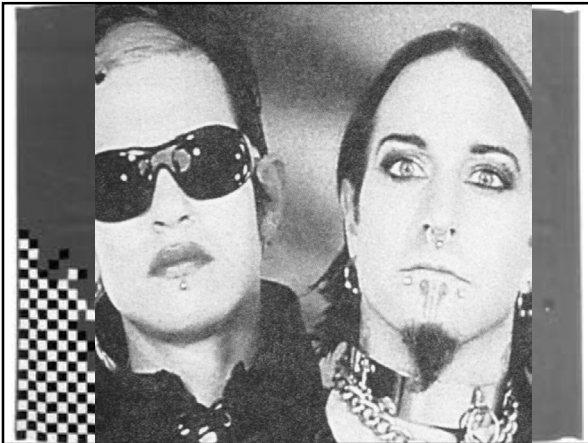
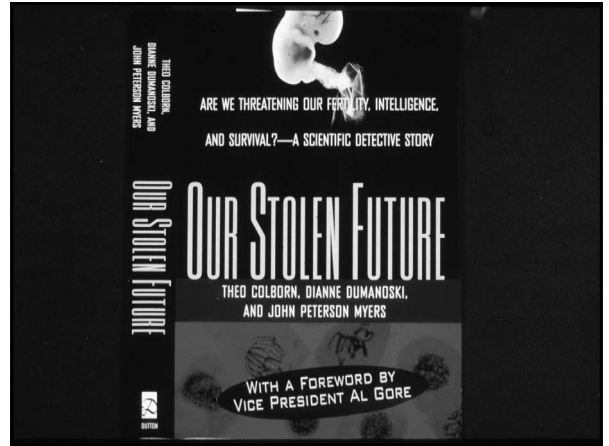


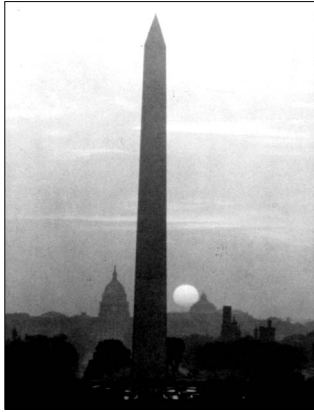
**Nature's Carcinogen FUSARIUM  
Infected Wheat, Rye, Barley and Oats**

**Death to One-third of Ireland's  
Population**

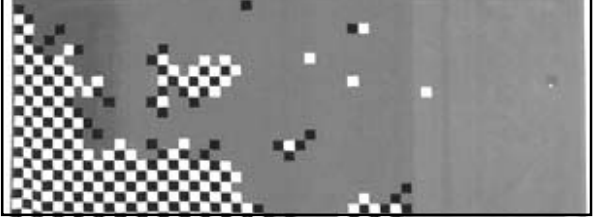
**Fungicide like Captan Could Have  
Averted Tragedy**

POISONS  
of the Past





## **The *THREADBARE* Weave of Five Foolish Threads**



- 1. Dose-response is Linear**
- 2. Proof of a Negative is Required**
- 3. Correlations are Causations**
- 4. Men are Cancer-Prone Rodents**
- 5. All Risks are Equal**

### **EPA'S SAFETY POSE ON DIOXINS & PCBs:**

- Adverse effects on reproductive, hormone, and immune systems**
- Abnormal fetal development**
- Cancer from current exposure levels**

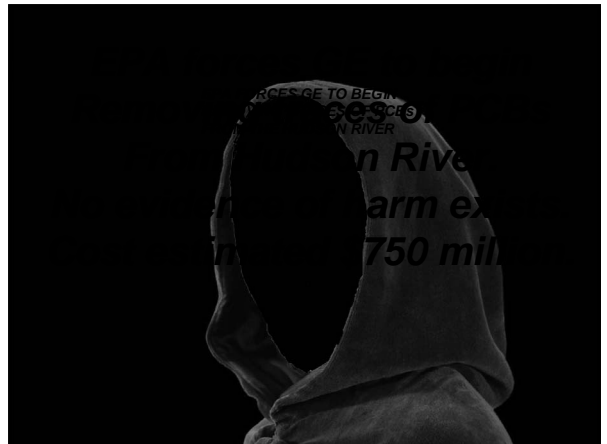


### **Threadbare Regulation?**

#### **Sources of Dioxin in the U.S.Environment:**

- 82.0% *Natural and Other*
- 5.6% *Motor Vehicles*
- 5.2% *Metals Production*
- 2.0% *Electricity Generation*
- 1.3% *Wood Combustion*
- 1.1% *Pulp/Paper*
- 1.0% *Medical Waste Incinerators*
- 0.7% *Municipal Waste Combustors*
- 0.42% *Pesticides, Fungicides*
- 0.42% *Cement Production*
- 0.30% *Hazardous Waste Incineration*

\*By 2006 regulatory and litigation costs associated with dioxin will balloon far above the more than \$100 million estimated a few years ago.



**“Our immune system actually uses chlorine, bromine and iodine to halogenate and kill invading microorganisms . . . . Chlorination is apparently as natural a biological process as blood clotting or salivation.”**

**Gordon W. Gribble, Ph.D.  
Dartmouth College**

**“Naturally produced organo-chlorine compounds have been found in groundwater samples dating back 5,200 years.”**

**Gordon W. Gribble, Ph.D.  
Dartmouth College**

## **Vitamin R?**



**Lung Cancer Decreases  
with Increases in Radon**

**-- Bernard Cohen & T.D. Luckey  
76k deaths?**

## **HORMESIS:**

*Net Beneficial effect from low levels of exposure to otherwise toxic substances, e.g. copper, selenium, fluoride, nickel, and ionizing radiation.*

**MICHAEL FUMENTO**

**SCIENCE UNDER SIEGE**  
MICHAEL FUMENTO

**BALANCING TECHNOLOGY  
AND THE ENVIRONMENT**

**SCIENCE  
UNDER  
SIEGE**

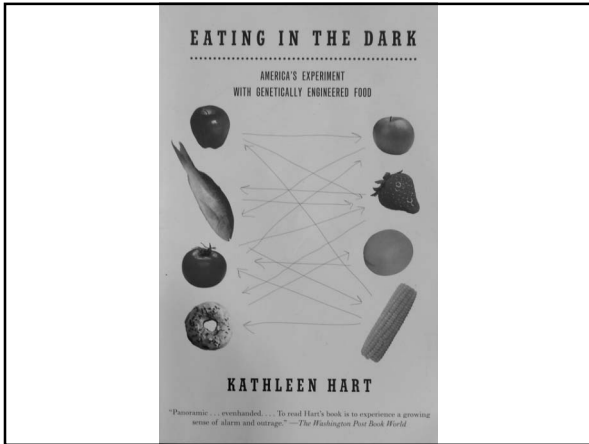
## **Science in Tatters Today**

**Harvard's School of Public Health bestows its highest award on Erin Brockovich.**

Best-selling advice book of 2005 by Kevin Trudeau on Natural Cures says tap water can kill you and organic food is our *only* hope.

**Microsoft plans to eliminate PVC plastics from their products due to "health concerns."**





**EATING IN THE DARK claims:**

*Genetically Modified Foods fail like nuclear energy technology fails. Three Mile Island and Chernobyl proved the limitations of scientists.*

*Rachel Carson was right about cancer causes.*

*Man has disrupted the web of life.*

*Faulty regulation by the government has allowed genetic pollution to occur so that it is now virtually impossible to obtain organic foods that are a hundred percent free of pollution from genetically engineered crops.*

**Lessons from Science**

- *Dose-response is not linear.*
- *Proof of a negative is not scientific.*
- *Correlations are not causations.*
- *Mice are not little men.*
- *All risks are not equal. Risks can be ranked.*

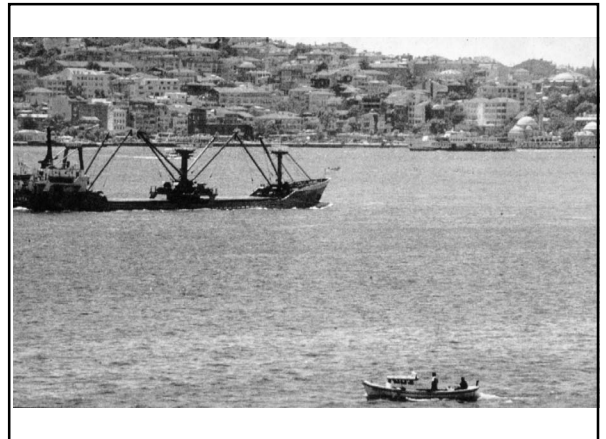
**Cloak of safety?**

**“The strongest argument made against the current criteria used to regulate chemical exposures in the U.S. today is that there are no health benefits.”**

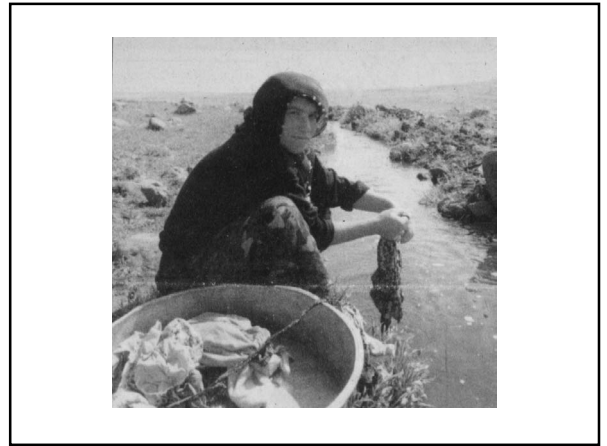
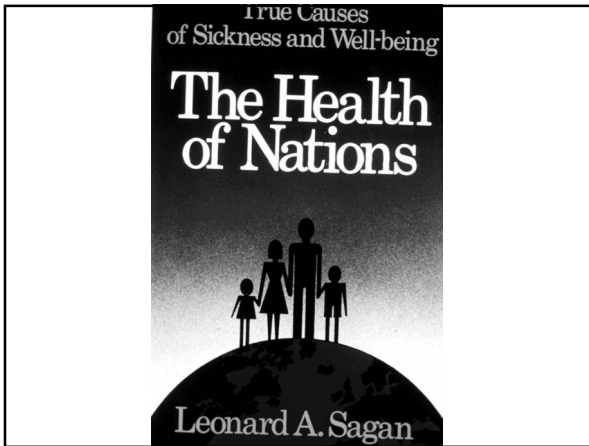
**- A. Wildavsky**

**SERIOUS PROBLEMS in DEVELOPING NATIONS**

- Diseases - Malaria, Typhoid Fever, Tuberculosis
- Insufficient Drinking Water
- Soil Erosion - Deforestation, Over-tilling
- Soil Nutrient Loss - Lack of Fertilizer
- Lack of Sewage Treatment
- Lack of Refrigeration
- Few Means of Food Distribution







**Aaron Wildavsky:**

**“Searching for zero-risk safety is the most dangerous game to be played.”**

- Natural resources and energy are getting *less* scarce.
- Pollution in the U.S. has been decreasing.
- The world's food supply is improving.
- Population growth has long-term benefits. . . .

## Facts to Remember

- The environment is cleaner than at any time in the past half-century.
- The environment is safer than at any time in recorded history.
- Life expectancy has never been longer.
- Cancer rates are falling, not rising.

## Facts to Remember

- Predictions of impending global ecological disasters are untrue.
- Most environmental problems have been or are being solved.
- Ideas are more important than things.
- Prosperity is good for the environment.

