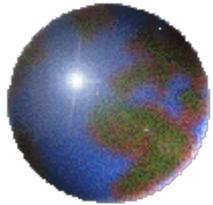


# *Global, Regional and Local Ecological Change: <sup>1</sup> Ethical Aspects for Public Health*



**Colin L. Soskolne, PhD (Epidemiology)**

[www.colinsoskolne.com](http://www.colinsoskolne.com)

**Professor Emeritus, University of Alberta, Canada**

**Adjunct Professor, University of Canberra, Australia**

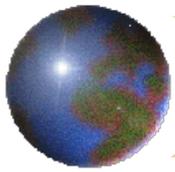
**2<sup>nd</sup> International Symposium on Ethics of Environmental Health**

**in conjunction with the**

**OPERRA Workshop on Ethics of Radiation Protection**

**České Budějovice (Budweis), Czech Republic, June 15 – 19, 2014**

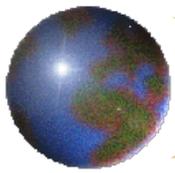




# *Three objectives*

- 1. Understand the ethical imperative for epidemiologists to address all levels of environmental change;**
- 2. Explore the influences that drive global trends in health in relation to professional values and ethics; and**
- 3. Identify novel ways forward if we are to change from a path destined to the collapse of civilization to a path of peace, justice and sustainability.**





# *Epidemiology*

→ Our focus in epidemiology is on **community** health; on the *prevention* of disease, disability and premature death in communities

→ We study health problems with a view to developing **policy interventions** to correct the problem

→ There are many **competing interests** in the work done by epidemiologists

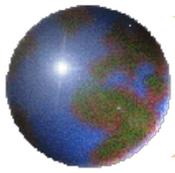


TEFLON?...  
LINKED TO BIRTH  
DEFECTS?

DON'T WORRY,  
THE ACCUSATION  
WON'T STICK.

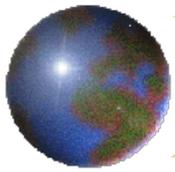


MAGS  
Edmonton  
Journal



- ✚ **The Dominant Paradigm**
- ✚ **The Contextual Narrative**
- ✚ **The Role of Impartial Science in the Public Interest**

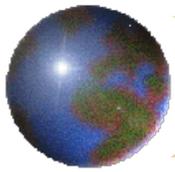




## *Pervasive influences and pressures on scientists*

- ✚ **From funding sources to peer review**
- ✚ **From the questions we ask through access to data**
- ✚ **From study design to data analysis and interpretation**
- ✚ **From dissemination to job security**



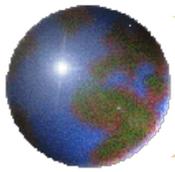


## *While epidemiologists do their research*

7

- ❖ **Who takes the risks while who derives the benefits? Or, whose interests are being served in this/that policy?**
- ❖ **Does the burden of proof of safety lie on the proponent of a new product, or on John and Jane Public?**



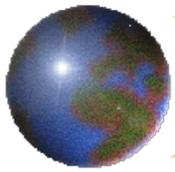


# *Epidemiology as an applied science*

**Because it is possible to manipulate experimental and control groups in ways that introduce bias and thus fail to serve the public interest through the pursuit of truth (as expected of scientists), it is recognized that ethical training and oversight are crucial.**

**Our ethics and values determine in large part our behaviours.**

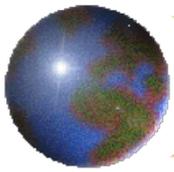




## *Hill concludes ... (1965)*

**“All Scientific work is incomplete – whether it be observational or experimental. All scientific work is liable to be upset or modified by advancing knowledge. That does not confer upon us a freedom to ignore the knowledge we already have, or to postpone the action that it appears to demand at a given time.”**



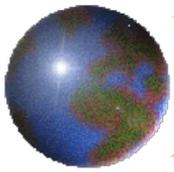


# *Why ethics in the professions?*

10

- ✦ **Keep ourselves on track, or keep our own house in order**
- ✦ **Socialize our students; our need to equip them with the skills needed to speak truth to power**
- ✦ **Professional accountability according to norms of behaviour**
  - **IN WHOSE BEST INTERESTS?**
  - **WHO IS TAKING THE RISKS?**
  - **WHO IS DERIVING THE BENEFITS?**

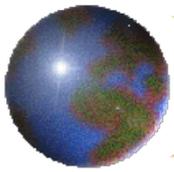




**They provide the anchor for our activity and collective motivation**

*... maintain, enhance, and promote health in communities worldwide ... work to protect the public health interest above any other interest ...*

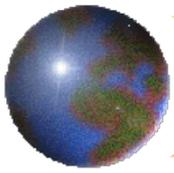




# *First Principles About Ethics*

- ❖ **Biblical directives/prescriptions**
- ❖ **The Golden Rule**
- ❖ **History of guideline development**
  - ❖ **Nazi experiments → Trials → Belmont Report**
  - ❖ **Georgetown “Mantra”**
  - ❖ **Specialty and sub-specialty codes, guidelines, and standards of “best” practice**





# THE GOLDEN RULE

- *What is hateful unto you, do not do unto your neighbour*

*Hillel, Babylonian Talmud, Tractate Shabbat, 31B*

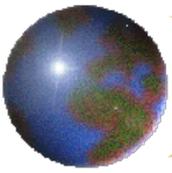
- *Treat others as we would want them to treat us or our loved ones*

*Luke 6:31 and Matthew 7:12*

- *Treat others justly so that no one would be unjust to you*

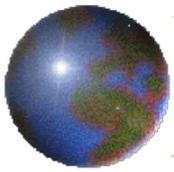
*From the Prophet Mohamed's Last Sermon*





*Let us recognise that ...*





# *THE NORMAL RANGE OF HUMAN CONDUCT*

15

*VERY POOR*



*VERY  
GOOD*

*AND EVERYTHING  
IN BETWEEN*

*DISHONEST*



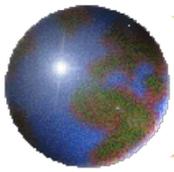
*HONEST*

***POWER CORRUPTS. ABSOLUTE POWER  
CORRUPTS ABSOLUTELY!***

*(Lord Acton's premise)*

***NO ONE IS IMMUNE!***





# *THE GOLDEN RULE - augmented*

- *What is hateful unto you, do not do unto your neighbour*

*Hillel, Babylonian Talmud, Tractate Shabbat, 31B*

- *Treat others as we would want them to treat us or our loved ones*

*Luke 6:31 and Matthew 7:12*

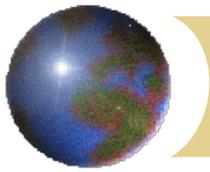
- *Treat others justly so that no one would be unjust to you*

*From the Prophet Mohamed's Last Sermon*

- *Do our level best*

- *Assert ourselves if we find someone else who has done ill: speak truth to power*

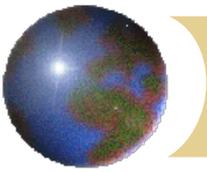




# *But, what are we up against?*

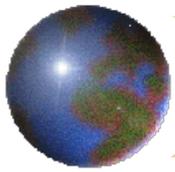
- ✚ **What creates/drives misconduct in science?**
- ✚ **What tempts scientists away from the pursuit of truth?**
- ✚ **How does misconduct derail scientific discourse?**
- ✚ **How does misconduct influence public policy and hence population and global environmental health?**
- ✚ **Confrontation, and the challenge of speaking truth to power!**





*Ethical decision-making, drawing on what is noted above, is required at every step in both research and in practice*



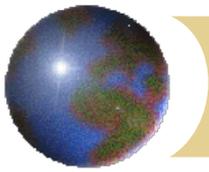


# *We must not be naive*

*Be aware of forces at play that influence both science and policy.*

*... Great vigilance and personal integrity are required to counter the influence of financially interested parties and corrupt / morally bankrupt governments.*





# Definitions

***ETHICS*** - *The rules of conduct/behavior recognized in respect to a particular class of human actions or a particular group or culture.*

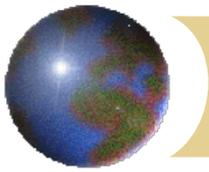
▶ *self-regulated*

***MORALS*** - *Principles or habits with respect to right or wrong.*

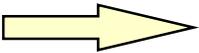
▶ *legally enforced*

**LEGALLY ENFORCED**





# *The Scientific Ethic\**

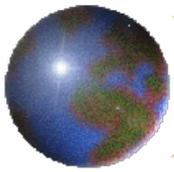
**A set of norms that define the scientific endeavor**  **an ethos that evolved gradually and organically.**

**PROFESSIONAL ETHICS** embody some of these norms, but **“The Ethic of Science”** is more like the charter that makes science possible than like a law book that spells out the specific rules.

**This ethic defines the *boundaries* that must be respected by those who wish recognition as part of the scientific community.**

\* Reece, RD & Siegal, HA. *Studying People: A primer in the ethics of social research*. Mercer 1986, pp. 62-70.





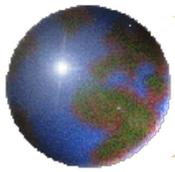
# *Deontological* (i.e., duty-based)

*In essence, the scientific ethic expects of scientists the duty to:*

1. **Use appropriate methods;**
2. **Be objective;**
3. **Be honest in reporting;**
4. **Publish results - *POSITIVE* as well as *NEGATIVE*;**
5. **Prohibit distortion in, for example:**
  - *Falsification of data*
  - *Biases inherent to study design*
  - *Proper analytical procedures*
  - *Objective interpretation*
6. **Do one's own work:**
  - *Plagiarism*
  - *Acknowledge sources*
  - *Graduate students not to be exploited*

**GOOD ETHICS ↔ GOOD SCIENCE**





# *The FUNDAMENTAL PRINCIPLES of BIOETHICS include* (from Beauchamp & Childress)

## **RESPECT FOR AUTONOMY**

*- Requires Respect for Individual Rights and Freedoms* (voluntary vs. involuntary exposures)

## **BENEFICENCE**

*- Requires Doing Good - Consider consequences of interventions in people's lives and of findings*

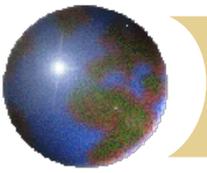
## **NON-MALEFICENCE**

*- Requires Doing No Harm*

## **JUSTICE**

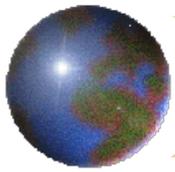
*- Requires the fair and equitable allocation of risks and benefits to all without discrimination*





- *No hierarchy among the four principles*
- *Constant tension among the four principles*
- *Aim to maximize each of the four through every step in our daily work as professionals serving the public interest*





## ✚ **Protect the most vulnerable in society**

(e.g., unborn, children, Inuit, frail elderly) - **beneficence**

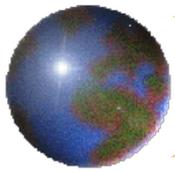
## ✚ **Involve communities in our research**

(ensure community relevance of our work) - **autonomy**

## ✚ **Integrity in Public Health**

(serve the public health interest above any other interest)  
- **beneficence and non-maleficence**

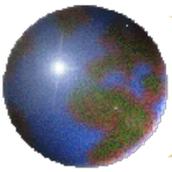




# *Further principles that apply*

- ❖ **ENVIRONMENTAL JUSTICE**
- ❖ **THE POLLUTER PAYS**
- ❖ **PRECAUTIONARY PRINCIPLE**
- ❖ **SOLIDARITY**
  
- ❖ **POST-CAUTIONARY PRINCIPLE**
- ❖ **THE SEVENTH GENERATION PRINCIPLE**
- ❖ **And OTHERS**





# *The **FUNDAMENTAL PRINCIPLES** of BIOETHICS include (under Justice)*

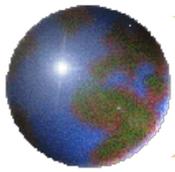
## ✚ ENVIRONMENTAL JUSTICE

- ✚ *Who is taking the risks?*
- ✚ *Who is deriving the benefits?*

## ✚ THE POLLUTER PAYS

- ✚ *incentive to internalize costs*



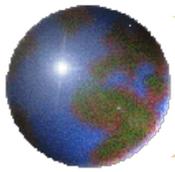


*The **FUNDAMENTAL PRINCIPLES** of **BIOETHICS** include (under **Non-maleficence and Respect for Autonomy**)*

## **PRECAUTIONARY PRINCIPLE**

- ❏ **where there is a risk from a certain agent, the presence of uncertainty shall not be used as a reason for postponing cost-effective measures to prevent such exposure**





# *Levels at which we operate*



## ☉ **Macro lens**—*country*/***GLOBAL***

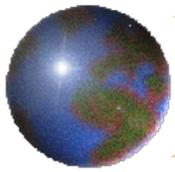
- ☒ From an elevation of about 10,000 meters ...  
... advocates for global health and well-being

## ☉ **Meso lens**—*community*/***REGIONAL***

- ☒ From an elevation of ~100 meters ... community advocates

## ☉ **Micro lens**—*physician-patient*/***LOCAL***

- ☒ On the ground ... patient advocates



# *Traditional Public Health Domain:*

## *Meso-level*

☉ **Sanitation**

---

☉ **Water Quality**

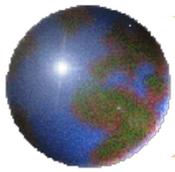
☉ **Food Safety**

☉ **Air Quality**

---

☉ **Vaccination programs**

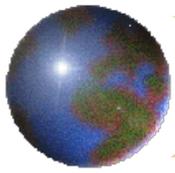




## *But, New Concerns of Public Health*

- ⊕ **As we tamper with the very fabric of life through expansion of the human enterprise, Nature's Services are changed; these services we take for granted and assume free-of-charge in their support of life**
- ⊕ **The effect is a net negative, with global impacts *such as* climate change, declines in air, water and soil quality, as well as food security issues**

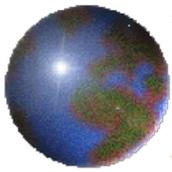




# *Contemporary global-scale issues with major human health implications*

- ⊕ **Global geo-climatic system changes** (e.g., global warming, sea level rise, ocean acidification); CO<sub>2</sub> levels continue to rise
- ⊕ **Population growth** with rapid urbanization and the development of mega-cities; Mass forced and voluntary migrations; whither civilization?
- ⊕ **Expansion of consumption-intensive lifestyles** (e.g., into China and India, each with 1B + populations)
- ⊕ **Increasing global and within-country disparities**
- ⊕ **Resource depletion and fresh water declines everywhere**
- ⊕ **Resurgence of old diseases and emergence of new** (e.g., malaria and tuberculosis, HIV/AIDS, SARS)
- ⊕ **Species extinctions**
- ⊕ **The growth-bound paradigm is entrenched**
- ⊕ **The global debt crisis and the threat of economic collapse**





# ***EVIDENCE: Profound Declines in Ecological Integrity Demonstrated by ALL Markers of Biodiversity***

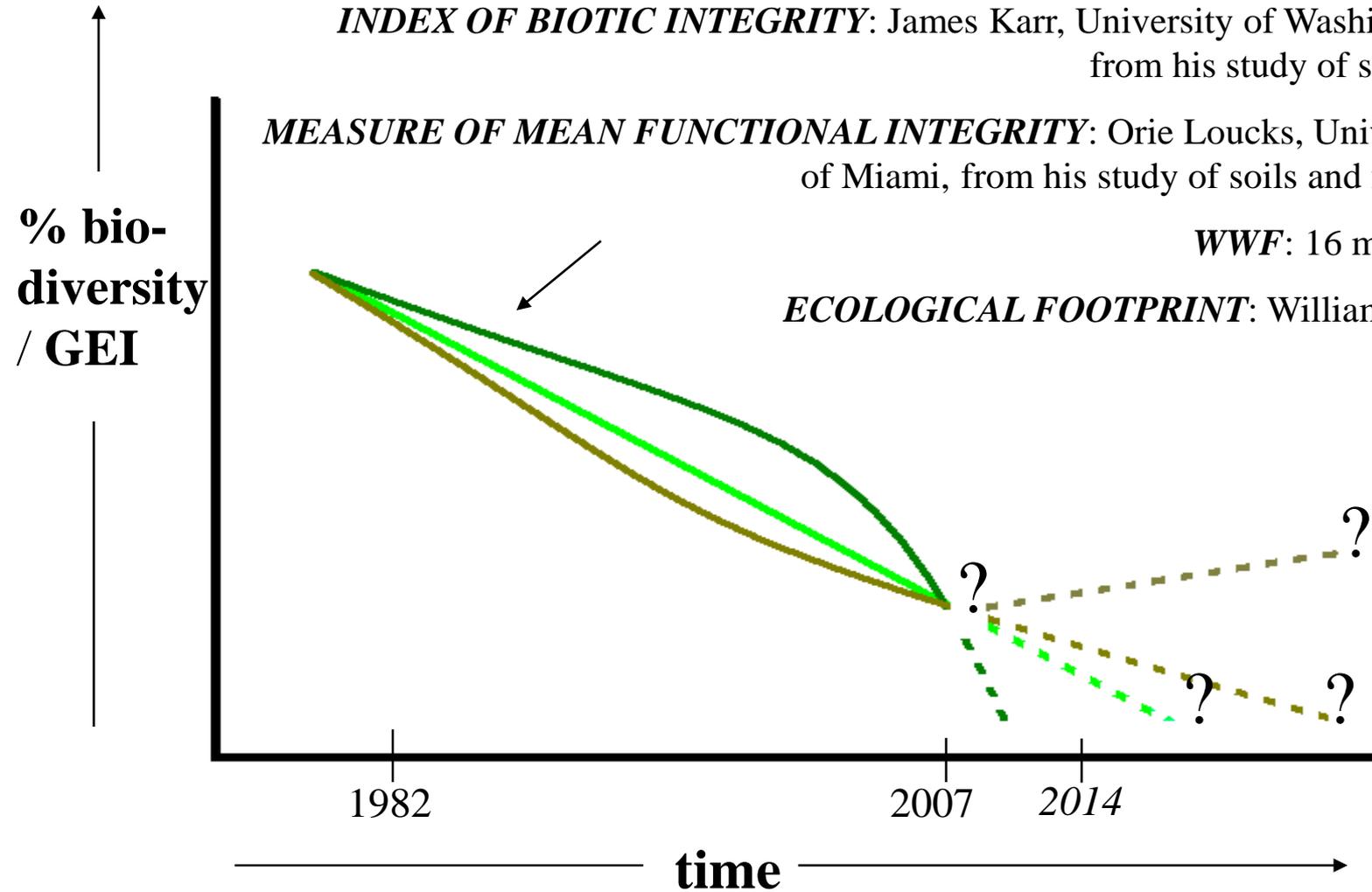
**The 25 years (1982-2007) saw an ~50% reduction in biodiversity as measured by INDEPENDENTLY-DERIVED indicators**

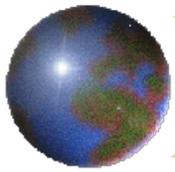
*INDEX OF BIOTIC INTEGRITY*: James Karr, University of Washington, from his study of streams

*MEASURE OF MEAN FUNCTIONAL INTEGRITY*: Oriie Loucks, University of Miami, from his study of soils and forests

WWF: 16 markers

*ECOLOGICAL FOOTPRINT*: William Rees

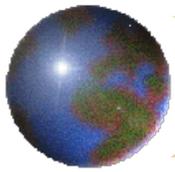




**Why should epidemiologists and public health researchers and practitioners be concerned with matters of a global nature?**

- *Prevent harms on a massive scale*
- *The Right to Life for both present and future generations, globally*





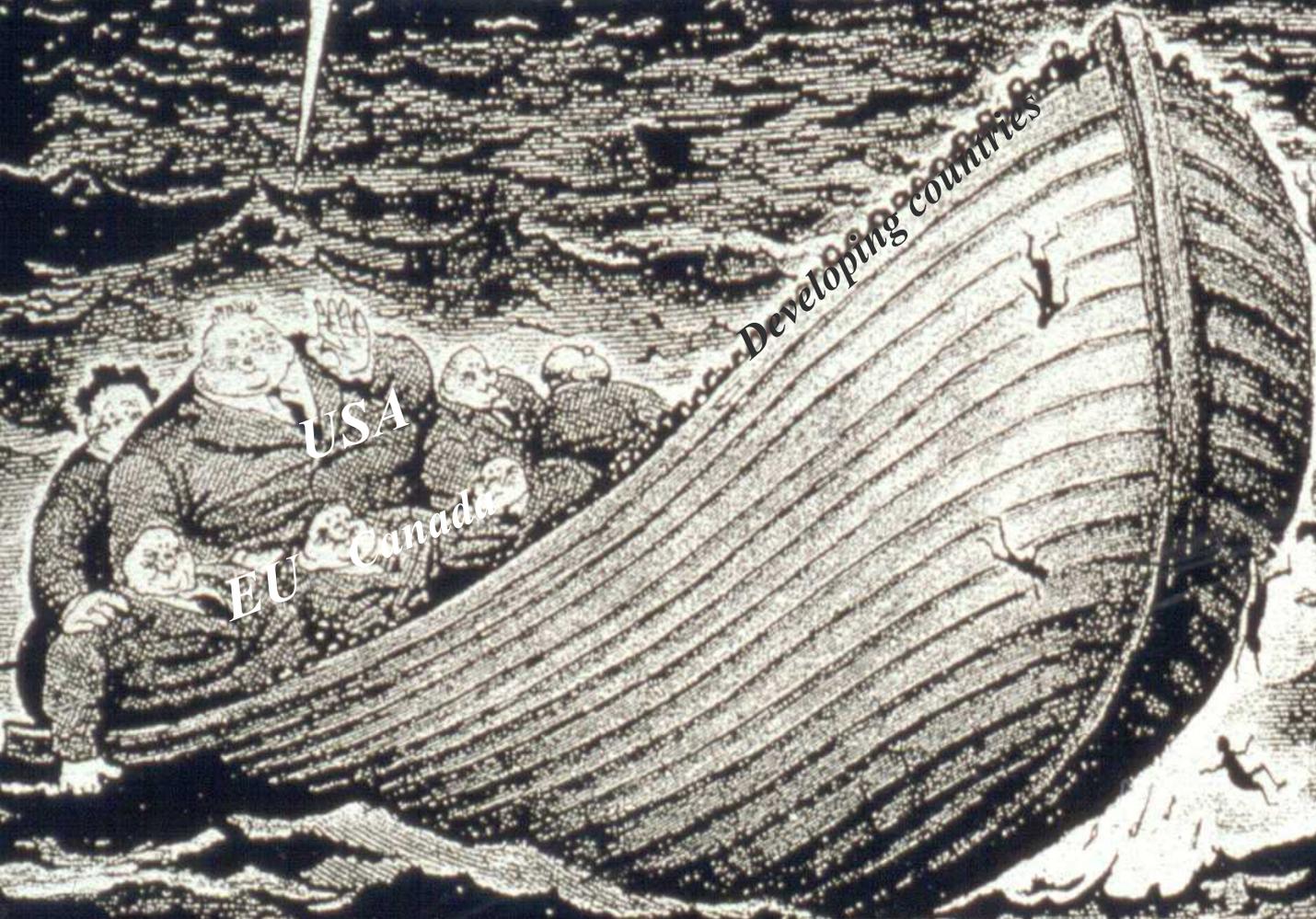
# Five Stages of Grief

*Elizabeth Kübler-Ross, 1969 "On Death and Dying"*

- ✦ Denial: *It can't be happening!*
  - ✦ Anger: *Why me? It's not fair!*
  - ✦ Bargaining: *Just let me live to see my children graduate!*
  - ✦ Depression: *I'm so sad, why bother with anything?*
  - ✦ Acceptance: *It's going to be OK!*
- 
- ✦ LAYING BLAME: *It's someone else's fault*



HEY, YOU UP AT THE FRONT!  
STOP BREEDING!

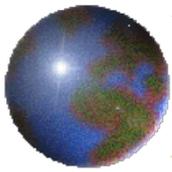


USA

EU

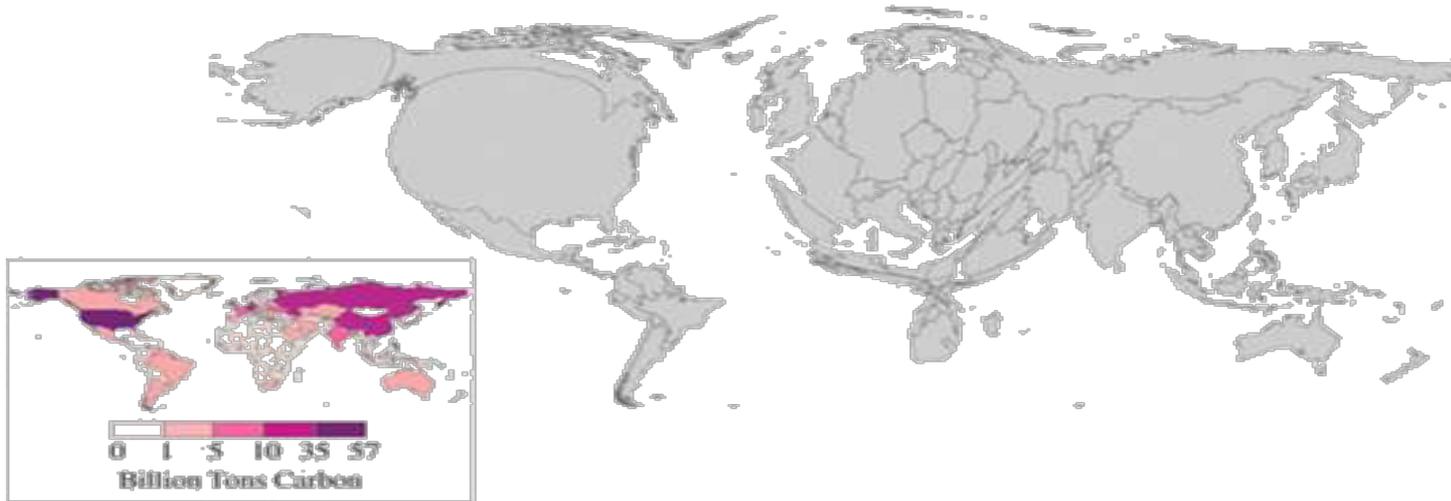
Canada

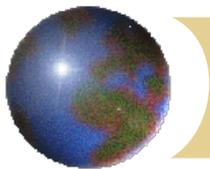
Developing countries



# *Ethical dimensions of global climate change*

*November 6, 2007 (Courtesy J. Patz) -- Cartograms*





# China, India attack Western climate 'hypocrites'

*Daily Telegraph*

BEIJING, NEW DELHI

China is insisting that rich countries commit to large cuts in emissions of greenhouse gases, while declining to put a ceiling on its own levels.

Four months before the Copenhagen negotiations, which aim to produce a successor to the Kyoto treaty, China's chief climate change negotiator confirmed that the world's leading polluter was holding out for developed countries to reduce emissions by 40 per cent by 2020 from 1990 levels.

"We have all along believed that due to the historical responsibility of the developed nations, they must continue to take the lead with large reductions beyond 2012," said Yu Qingtai.

While China has developed green energy industries, it has also resisted any regulations that would dampen growth. It is not required to set emission targets since its per-capita rate is still far lower than those in Western countries.

Meanwhile, India's climate change envoy said Wednesday that "hypocritical" Western countries must sacrifice some luxuries before asking developing countries to cut their greenhouse gas emissions.

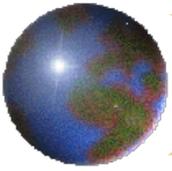
Shyam Saran said the country would not take any measures that could restrict its growth. Instead, he said it would fund developments to reduce carbon emissions, increase green power generation and improve energy efficiency.

He added that any further measures demanded by developed countries would be taken only if full funding and technological support were provided.

Saran said his government planned to bring electricity to remote villages by transforming agricultural waste into power. But he said the government would not yield to pressure from the "hypocritical" West.

"No one is prepared to touch their living standards," he said. "If Europe or the US increased fuel prices by \$1 a litre, it would make a substantial change in private transport, a major source of emissions."



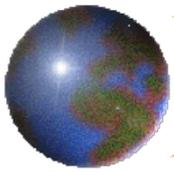


*Think globally,  
Act locally*

**What are the cumulative  
consequences of local actions?**

*René J Dubos*



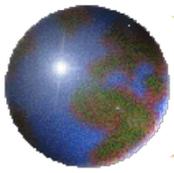


# *The principle of SOLIDARITY*

40

- ❖ **What goes around, comes around in our world that, environmentally, is a seamless web**
- ❖ ***"Made in Canada solutions to climate change" and "Voluntary compliance" are counter to this principle***
- ❖ **Too much self-interest ...**  
**The fox guarding the hen house ...**

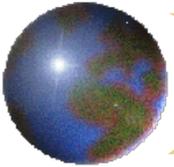




# *Ethical Principles – their utility*

- ✚ **Normative basis for rational policy**
- ✚ **Transparency of collective values**
- ✚ **Accountability for actions taken**





# The Four D's applied to scientists studying that which does not support the *status quo*

⊕ **DENY**

⊕ **DELAY**

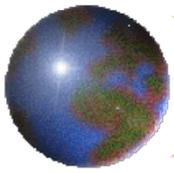
⊕ **DIVIDE**

⊕ **DISCREDIT**

---

⊕ ***DISMISS***]



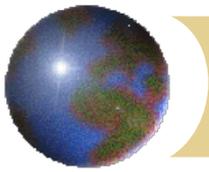


# *On Corporate Ethics and Environmental Pollution*

*“Corporations create 80% of our GNP. They, of all entities working, have the most potential for good or evil in our society.”*

*Judge Miles W. Lord, 1982*





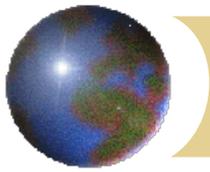
*“Industry’s offensive against the regulation of health and safety hazards uses academics to downplay or deny the seriousness of the hazards...”*

*Clayson and Halpern*

*J. of Public Health Policy*

*September, 1983*





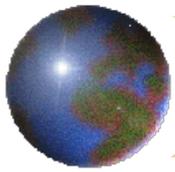
# Manufacturing Doubt

- ▶ **Epstein.**  
*The Politics of Cancer*, 1978
- ▶ **Davis.**  
*When Smoke Ran Like Water: Tales of Environ Deception ...*, 2002  
*The Secret History of the War on Cancer*, 2007  
*Disconnect: The Truth About Cell Phone Radiation ...*, 2010
- ▶ **Michaels.**  
*Doubt is their Product: How Industry's Assault on Science...*, 2008
- ▶ **McCulloch & Tweedale.**  
*Defending the Indefensible: The Global Asbestos Industry ...*, 2008

**The policy-maker's conundrum ▶ the fomentation of uncertainty by vested interests.**

**By increasing uncertainty, the policy-maker's ability to implement health policy is made all the more difficult.**





# *On Denying Climate Change*

**Among others:**

✚ **Born Lomborg (Denmark)**

✚ *The Skeptical Environmentalist* (2001)

✚ **The Koch Industries (USA)**

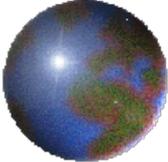
✚ **Powerful interests (in particular, oil)**

✚ **One subsidiary is Georgia-Pacific (asbestos)**

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▶ ***Right-wing think tanks;  
sociopaths?***






# Climate change questioned in schools mailout

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## U.S. think-tank says it's trying to inject 'balance' by sending out 11,000 brochures and DVDs

MIKE DE SOUZA  
Canwest News Service  
OTTAWA

An American think-tank has sent out more than 11,000 brochures and DVDs to Canadian schools urging them to teach their students that scientists are exaggerating how human activity is the driving force behind global warming.

The Chicago-based Heartland Institute said its goal is to ensure that students are provided with a "balanced" education about "an important and controversial issue," but critics, including a leading climate scientist, described it as a campaign of misinformation.

The mailout, sent in February, included results from international surveys of climate scientists conducted in 1996 and 2003, along with a 10-minute DVD called *Unstoppable Solar Cycles, The Real Story of Greenland*.

"It took me a while to figure out what they were up to," said Eric Betteridge, who teaches at Hillcrest High School in Ottawa.

The Heartland Institute says that it purchased a database list of addresses of 11,250 schools from across the country, including about 10,000 private or faith-based schools, for a massive mail campaign aimed at Canadian children in all provinces.

"All the kids in our schools are being taught that climate change is a serious crisis and that we've got to reduce our CO<sub>2</sub> and they're being taught (that) quite falsely," said Jay Lehr, the science director at the Heartland Institute who sent the package.

"We would like to educate people and basically give them the other side of the issue, so we send out materials only in hope of a little balance."

The Sierra Club of Canada said that the Heartland Institute's information was far from being balanced.

"It's alarming that an American think-tank is distributing misinformation on the most important issue of our time in Canadian schools, to actually create an illusion that there is a scientific debate," said Emilie Moorhouse, a spokeswoman for the environmental group.

The Heartland Institute describes itself as a national non-profit research and education organization whose mission is "to discover, develop, and promote free-market solutions to social and economic problems."

The brochure and DVD said that scientists were "deeply divided" about "the notion that climate change is mostly the result of human activities." It also suggested that the sun was the main factor behind recent warming recorded on the planet.

The package does not make reference to the conclusions reached by governments and scientists from around the world in their 2007 assessment of the latest peer-reviewed research on climate change.

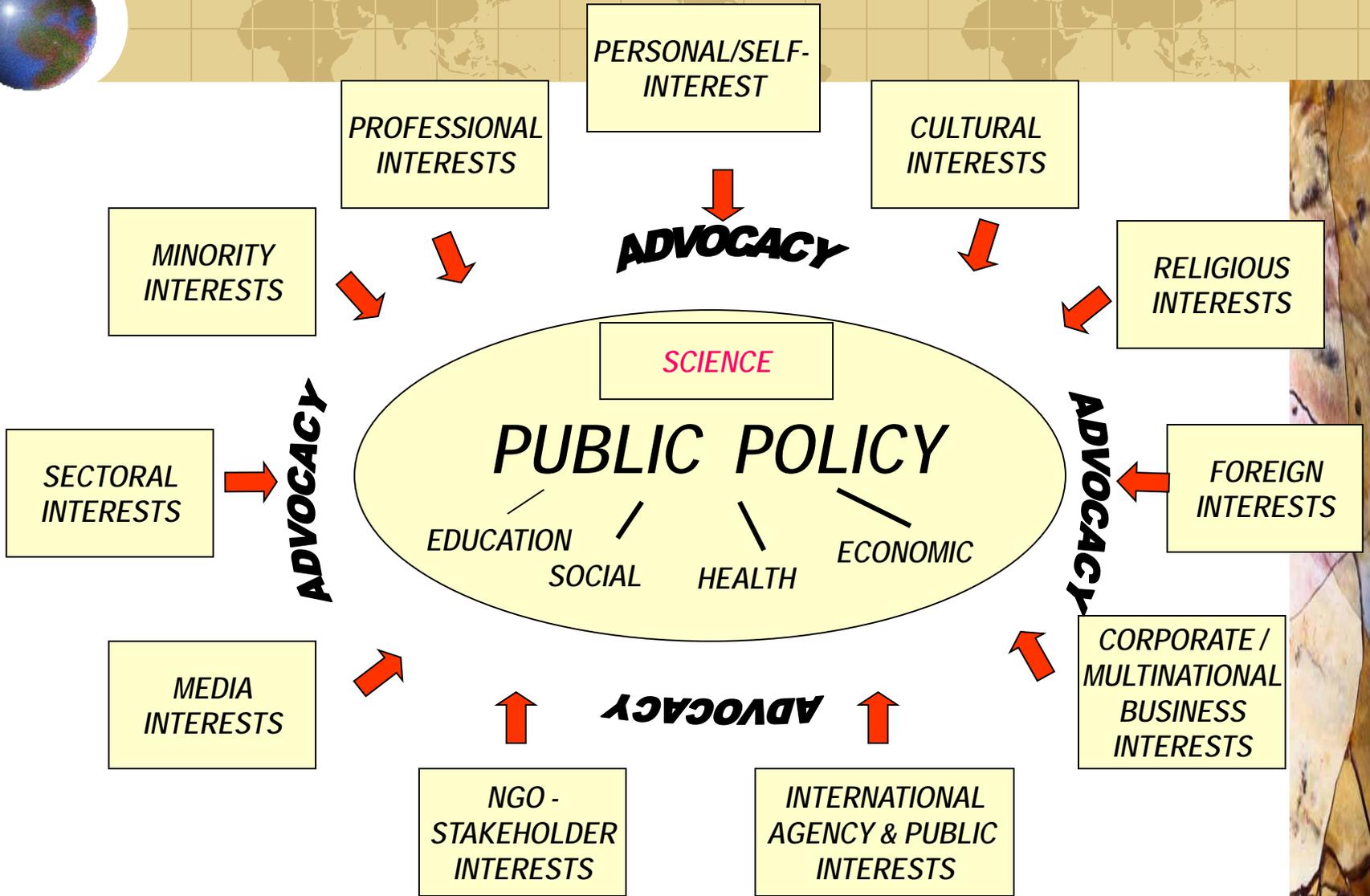
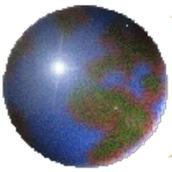
The Intergovernmental Panel on Climate Change wrote that global warming is unequivocal and that there is a 90-per-cent chance it is being caused by humans.

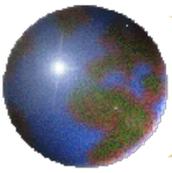
After reviewing the Heartland Institute package, Betteridge said he was left feeling both amused and distressed that someone would try to promote this material to children in the classroom.

"I think I would be concerned because it was well written," he said.

The Heartland Institute has received \$791,000 in funding from Exxon-Mobil since 1998, according to a recent analysis by Greenpeace USA.





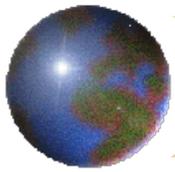


*Science is but one such pressure*

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→ ***HUMILITY AND  
EMPATHY FOR THE  
POLICY-MAKER***



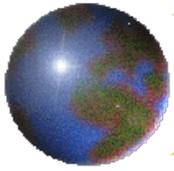


# *Classical techniques that skew results: from biased methods to **junk science***

50

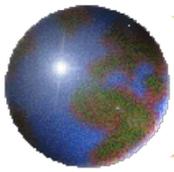
- ❖ **Under-powered studies**
- ❖ **Inadequate follow-up methods** (incl. pathology review; limitations on matching methods related to database limitations)
- ❖ **Inadequate follow-up time** (very long latency from exposure to the relevant disease outcome)
- ❖ **Contaminated controls**
- ❖ **Unbalanced discussion**
- ❖ **Selective disclosure of competing interests**





# Some recent exposés





## *Eleven articles...part of a crime-fraud*

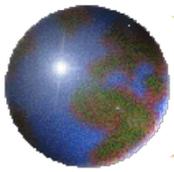
52

<https://www.rightoncanada.ca/?p=2078>

**June 7, 2013**

- **In a powerful decision, a New York appeal court has found that eleven articles, published in scientific journals, were potentially part of a crime-fraud. The articles, financed by Georgia-Pacific, were intended to cast doubt on the capability of chrysotile asbestos to cause cancer.**

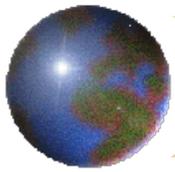




*<www.publicintegrity.org>*

- **Industry Muscle Targets Federal**  
*“Report on Carcinogens”* July 30, 2013
- *“Industry attacks on Public Health research have become more strident.”*  
**Linda Birnbaum, Director, US-NIEHS**

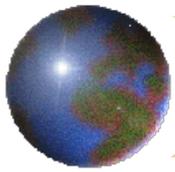




- ✚ **Oppression / Suppression Bias**
- ✚ **Repression Bias**

*A Dictionary of Epidemiology 5<sup>th</sup> Edition,  
OUP, 2008*



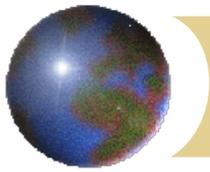


## **International Society for Environmental Epidemiology (ISEE) Procedure for Dealing with Beleaguered Colleagues and/or Potential Whistleblowers**

- ✦ *A Procedure for the ISEE to Apply in Responding to an Appeal by Any Environmental Epidemiologist and Health Scientist Who Claims to be Made to Feel Threatened for Having Identified a Hazard and/or for Proposing to Study a Suspected Hazard*  
(Revised March 2009)

<http://www.iseepi.org/About/Docs/iseeprocedurefordealingwithbeleagueredcolleagues.pdf>

- ✦ **Moral Support Only ...**

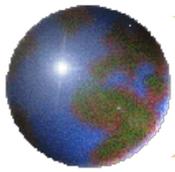


# *Exponentially worsening harms*

**✚ Harms caused through junk science conducted at the local level will have far less impact compared with the ramifications from harms arising through junk science unleashed at the global level.**

*Soskolne, CL. On the even greater need for precaution under global change (Reprinted from The European Journal of Oncology Library, Vol 2, 2003). Human and Ecological Risk Assessment 2005;11(1):97-106.*





# *New Group Aims to Reveal Truths, Protect Whistleblowers*

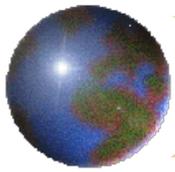
**Like WikiLeaks, but better:**

✚ <http://www.takepart.com/article/2014/06/04/whistleblowers>

***What separates a democracy from a dictatorship?***

**Government transparency, among other things. New organization's mission is to “shed light on concealed activities that are relevant to human rights, **corporate malfeasance, the environment**, civil liberties, and war” by calling on Americans to share “official information—whether governmental or corporate—that the public has a right to know.” The bottom line for **ExposeFacts** is in its tagline: *Whistleblowers Welcome.***

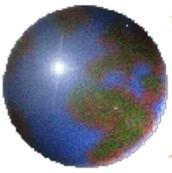




# *On Virtue Ethics ...*

*→ To be a professional of integrity,  
we must appreciate the traits of a  
virtuous character*

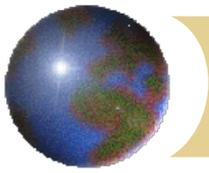




# *Character vs. Actions*

***Virtues** do not replace ethical rules. Rather, an account of professional ethics is more complete if virtuous traits of character are identified, such as:*





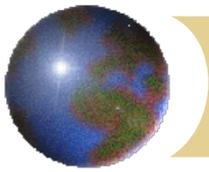
# Epidemiology and virtue ethics

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*Int J Epidemiol. 1998 Jun;27(3):343-9. Weed DL, McKeown R*

- **Humility** – Respect the input & opinions of others / Self-effacement
- **Fidelity** – Honour one's commitments / Promote trust
- **Justice** – Act fairly
- **Patience** – Take time to hear others' viewpoints
- **Industry** – Do your level best / Excel
- **Veracity** – Tell the truth / Be honest
- **Compassion** – Empathize
- **Integrity** – Demonstrate good moral character
- **Serve** – Protect the most vulnerable/Serve the public interest
- **Prudence** – Err on the side of caution/Demonstrate good judgment



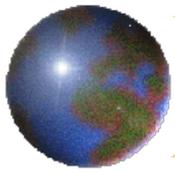


# *The Way Forward*

True democracy through a well-informed public underscored by an improved government science, technology and innovation strategy that should:

- ❖ Offer *incentives* to non-profit professional organizations in support of capacity-building to expose junk science, particularly where applied science works at the nexus of policy; and
- ❖ Introduce *disincentives* (i.e., regulatory penalties) for those engaging in producing junk science.





# *The Earth Charter ... duties-based*

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A **soft law** instrument ... to save us from ourselves

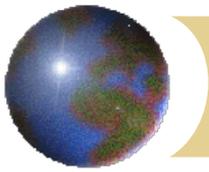
## **Preamble**

- *Respect and care for the community of life*
- *Ecological integrity*
- *Social and economic justice*
- *Democracy, non-violence, and peace*

## **The Way Forward**

<http://www.earthcharter.org/>





# *Discussion*

