Arsenic review panel public meeting Sept 12-13, 2005

Jennifer Sass, PhD

NRDC Senior Scientist

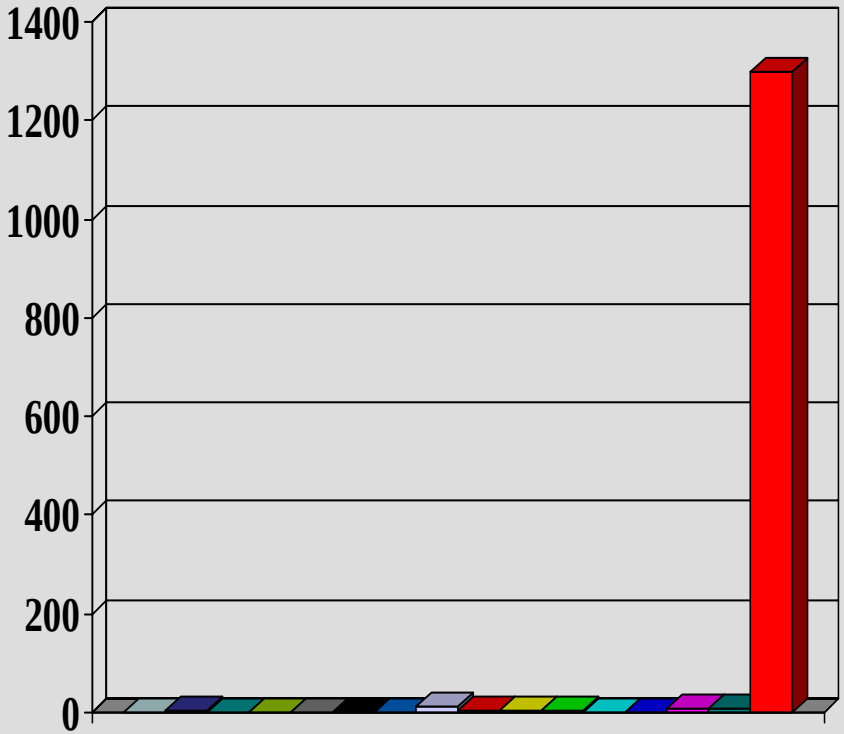
The Natural Resources Defense Council is a national, non-profit organization of scientists, lawyers and environmental specialists dedicated to protecting public health and the environment.
http://www.nrdc.org

NRC report (2001):

- Both cancer and non-cancer effects
- “magnitude of possible risk that exists at low levels is not quantifiable” (p. 4)
- “even small increases in relative risk for [high blood pressure and diabetes] could be of considerable public-health significance” (p. 4)
- Bladder and lung cancer
- Probably multiple independent and interdependent mechanisms (p. 6)
- No reliable data on early life susceptibility (p. 8)
- Combined cancer risk estimate for 3 ug/L in water is 4-10 per 10,000

The estimated cancer risk at the drinking water standard of 50 µg/L (ppb) for arsenic is more than 100 times greater than that for any other drinking water contaminant

Per 100,000



From Smith et al, Science, 2002

CARCINOGENS IN DRINKING WATER

Chemical	MCL (53) (µg/liter)	Cancer risk at MCL per 100,000
Arsenic	50	1300 (16) 1650* (4)
Benzene	5	0.2–0.8 (54)
Benz[a]pyrene	0.2	4.2 (54)
Carbon tetrachloride	5	1.9 (54)
Chlordane	2	2 (54)
1,2-Dichloroethane	5	1.3 (54)
Dichloromethane	5	0.1 (54)
Di(2-ethylhexyl)phthalate	6	0.2 (54)
Ethylene dibromide	0.05	12.5 (54)
Heptachlor	0.4	5.2 (54)
Heptachlor epoxide	0.2	5.2 (54)
Hexachlorobenzene	1	4.6 (54)
Polychlorinated biphenyls (PCBs)	0.5	0.5 (54)
Pentachlorophenol	1	0.3 (54)
Toxaphene	3	9.6 (54)
Vinyl chloride	2	8.4 (54)

*Extrapolated upward from results given for 20 µg/liter

EPA 2005 Cancer Guidelines

- Direct EPA to consider all modes of action
- Direct EPA to consider early life exposures
- “Estimating thresholds can be problematic; for example, a response that is not statistically significant can be consistent with a small risk that falls below an experiment’s power of detection.” (p.1-11)

We are concerned that EPA may have prematurely dismissed data on inorganic arsenic…

Does EPA understand the mechanism of toxicity of inorganic arsenic fully enough to be confident that it can differentiate between the endpoints of As(i) and DMA toxicity?

Is EPA confident that it has evaluated all relevant endpoints of DMA exposure?

Ischaemic heart disease?

Diabetes mellitus?

Immunotoxicity?

Reproductive and developmental effects?

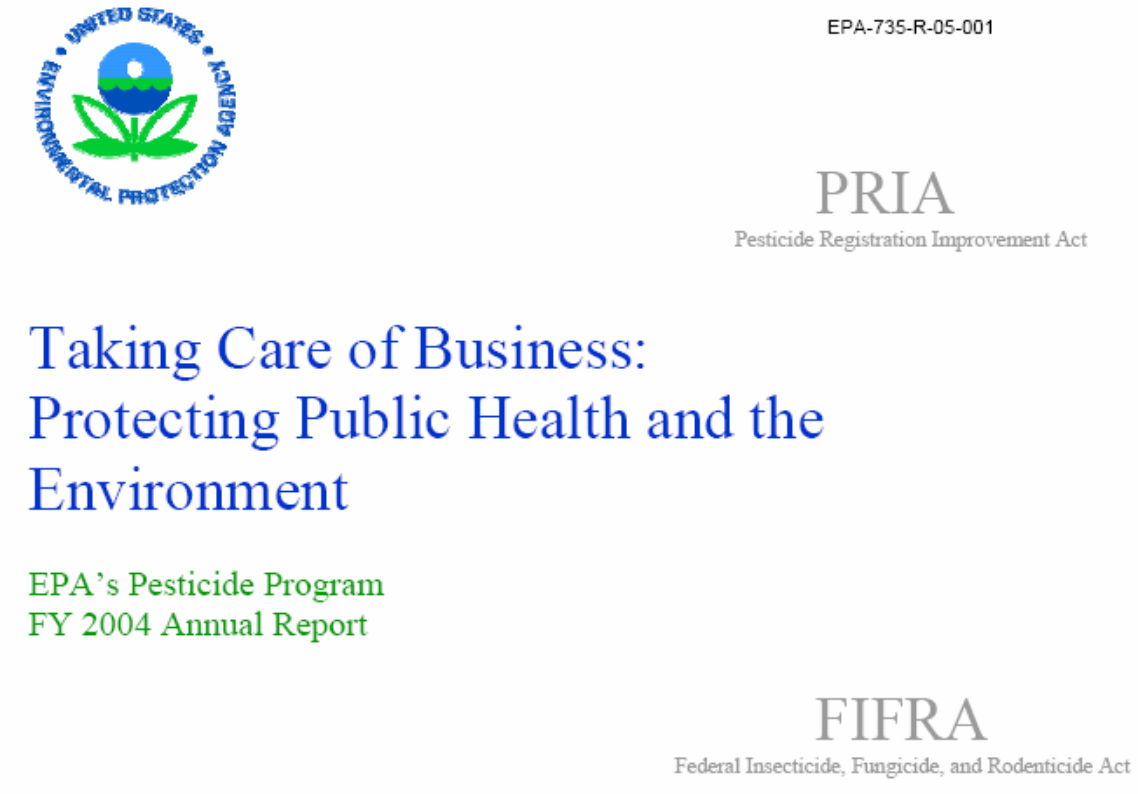
(IARC, 2004)

Is EPA confident that it has evaluated all relevant endpoints of DMA exposure?

- Stress protein induction?
- Induction of transcription factors?
- Induction of oxidative stress?
- Altered DNA repair capacity?

(IARC, 2004)

U.S. EPA FY2004 Annual Report aptly sums up its order of priorities: business first, public health trailing afterwards….



EPA-735-R-05-001

PRIA

Pesticide Registration Improvement Act

Taking Care of Business:
Protecting Public Health and the Environment

EPA's Pesticide Program
FY 2004 Annual Report

FIFRA

Federal Insecticide, Fungicide, and Rodenticide Act

We support the EPA Administrator and the Office of Prevention, Pesticides and Toxic Substances (OPPTS) in its stated goal to,

"*regulate pesticides and chemicals to ensure protection of public health and the environment, as well as promote innovative programs to prevent pollution*".

http://www.epa.gov/oppts/index.htm