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www.epi2008.com

XVIII IEA World Congress of Epidemiology
VII Brazilian Congress of Epidemiology
Epidemiology in the construction of health for all: tools for a changing world
September 20 - 24, 2008 - FIERGS - Porto Alegre - RS - Brazil

Sunday, 21 Sept. 2008 / 03:45 - 05:30

Environmental toxic substances:
exposed individuals and exposed populations.

Chair: Miquel Porta (Barcelona, Spain)

With:

Antonio Carlos Monteiro Ponce de León (Brasil, RJ)

Duk-Hee Lee (Daegu, South Korea)

IEA
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www.imim.es/programesrecerca/epidemiologia/en_documentsgrecm.html

Home > Research programmes > Epidemiology and public health >

Clinical and Molecular Epidemiology of Cancer

Scientific documents

- B. Conferencia: "¿Deberíamos analizar los compuestos tóxicos persistentes que tenemos en la sangre?"
- Accumulation of genetic and epigenetic alterations: a key causal process between the environment and the occurrence of cancer
- Between molecules and the environment: keeping patients in the picture
- A. Encuentro de trabajo: "Concentraciones de compuestos tóxicos persistentes (CTPs) en la población general española: información disponible y posibles estudios para un diagnóstico de la situación"

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XVIII IEA World Congress of Epidemiology
Miquel Porta - 21 Sept. 2008 - Porto Alegre

Exposed individuals and exposed populations

Environmental toxic substances: exposed individuals and exposed populations.

XVIII IEA World Congress of Epidemiology
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September 20 - 24, 2008 - FIERGS - Porto Alegre - RS - Brazil

Miquel Porta, MD, MPH, PhD
Institut Municipal d'Investigació Mèdica, Universitat Autònoma de Barcelona, and University of North Carolina at Chapel Hill.
www.imim.es

Porto Alegre
Sunday, Sept. 21, 2008

Persistent toxic substances: exposed individuals and exposed populations

J Epidemiol Community Health 2004;**58**:534–535.

EDITORIAL

Occup Environ Med 2002;**59**:651–653

Pollution

Implementing the Stockholm Treaty on Persistent Organic Pollutants

M Porta, E Zumeta

Implementation of the Stockholm Treaty on Persistent Organic Pollutants is a unique opportunity to foster changes in environmental, occupational, and food policies

J Epidemiol Community Health 2002;**56**:806–807

Bovine spongiform encephalopathy, persistent organic pollutants, and the achievable utopias

Sick individuals and sick populations

Geoffrey Rose

Rose G (Department of Epidemiology, London School of Hygiene and Tropical Medicine, Keppel Street, London WC1E 7HT, UK). Sick individuals and sick populations. *International Journal of Epidemiology* 1985;**14**:32–38.

Aetiology confronts two distinct issues: the determinants of individual cases, and the determinants of incidence rate. If exposure to a necessary agent is homogeneous within a population, then case/control and cohort methods will fail to detect it: they will only identify markers of susceptibility. The corresponding strategies in control are the 'high-risk' approach, which seeks to protect susceptible individuals, and the population approach, which seeks to control the causes of incidence. The two approaches are not usually in competition, but the prior concern should always be to discover and control the causes of incidence.

Based on a lecture to the Xth Scientific Meeting of the International Epidemiological Association, 27 August 1984, Vancouver, Canada.

International Journal of Epidemiology 2001;**30**:427–432

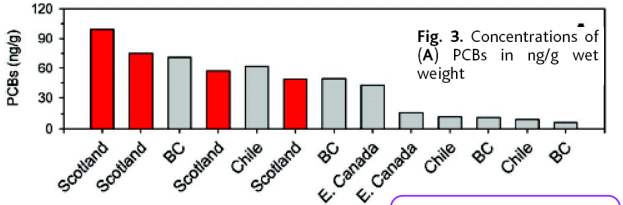

Fig. 3. Concentrations of (**A**) PCBs in ng/g wet weight

PTS levels in animal feed

Concentrations of CBs in commercial fish feed purchased at facilities in various countries at various times of the year. Each bar represents the analysis of one sample of fish feed, and the country

Fish feed purchased in Europe is indicated by red, and fish feed purchased in North or South America is indicated by gray.

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Miquel Porta - 21 Sept. 2008 - Porto Alegre

Exposed individuals and exposed populations

PTS levels in farm-raised and in wild salmon

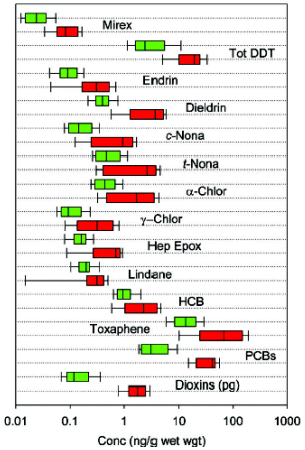
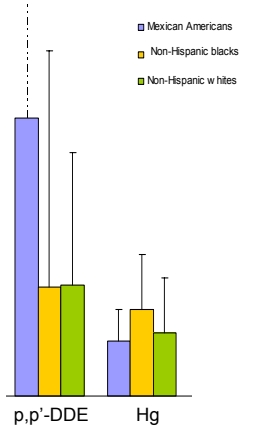


Fig. 1. Concentrations (in ng/g wet weight, except dioxins) of 14 contaminants found in farm-raised (red bars) and wild (green bars) salmon. The vertical lines represent the 10th, 50th, and 90th percentiles, and the boxes represent the 25th to 75th percentiles. Dioxins are in pg of World Health Organization toxic equivalents (WHO-TEQs) per g of wet weight and include polychlorinated dibenzo-*p*-dioxins and dibenzofurans and dioxin-like PCBs. Typically 75% of the total TEQ was due to the dioxin-like PCBs. Other abbreviations are as follows: Tot DDT, the *p,p'* and *o,p'* isomers of DDT, DDD, and DDE; Nona, nonachlor; Chlor, chlordane; Hep Epox, heptachlor epoxide.

serum concentrations of p,p'-DDE and Hg (ppb) among Mexican Americans, Non-Hispanic Blacks and Non-Hispanic Whites U.S.A. 2001-2002. Median and 75th percentile.

3rd. NRHEEC 2001-2002

www.cdc.gov/exposurereport

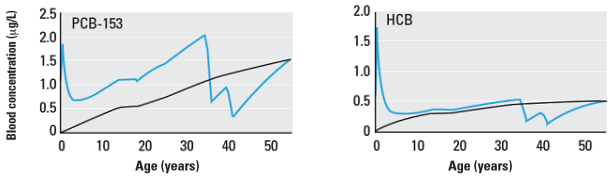


July 2008 • Environmental Health Perspectives

Physiologically Based Pharmacokinetic Modeling of Persistent Organic Pollutants for Lifetime Exposure Assessment: A New Tool in Breast Cancer Epidemiologic Studies

Marc-André Verner,[1] Michel Charbonneau,[2] Lizbeth López-Carrillo,[3] and Sami Haddad[1]*

[1]Département des sciences biologiques, Université du Québec à Montréal, Montréal, Québec, Canada; [2]INRS-Institut Armand-Frappier, Université du Québec, Laval, Québec, Canada; [3]Instituto Nacional de Salud Publica, Cuernavaca, Mexico



Toxicokinetic profiles for normal body weight history for a woman who was exposed to 10 ng/kg/day of each of the chemicals and had no pregnancy (black line) or was breast-fed for 6 months in childhood, was exposed to 18.7 ng/kg/day PCB-153, 11.6 ng/kg/day HCB, and who had two pregnancies at 35 and 40 years of age followed by 12-month lactation periods (blue line).

EDITORIAL

Could low-level background exposure to persistent organic pollutants contribute to the social burden of type 2 diabetes?

Duk-Hee Lee, David R Jacobs Jr, Miquel Porta

Persistent organic pollutants may contribute to cause diabetes

J Epidemiol Community Health 2006;**60**:1006–1008.

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Exposed individuals and exposed populations

Arsenic Exposure and Prevalence of Type 2 Diabetes in US Adults

Ana Navas-Acien, MD, PhD
Ellen K. Silbergeld, PhD
Roberto Pastor-Barriuso, PhD
Eliseo Guallar, MD, DrPH

JAMA, August 20, 2008

Design, Setting, and Participants Cross-sectional study in 788 adults aged 20 years or older who participated in the 2003-2004 National Health and Nutrition Examination Survey (NHANES) and had urine arsenic determinations.

Results

After adjustment for diabetes risk factors and markers of seafood intake, participants with type 2 diabetes had a 26% higher level of total arsenic (95% confidence interval [CI], 2.0%-56.0%) than participants without type 2 diabetes

After similar adjustment, the odds ratios for type 2 diabetes comparing participants at the 80th vs the 20th percentiles were 3.58 for the level of total arsenic (95% CI, 1.18-10.83).

A Strong Dose-Response Relation Between Serum Concentrations of Persistent Organic Pollutants and Diabetes

Results from the National Health and Examination Survey 1999–2002

Diabetes Care 29:1638–1644, 2006

DUK-HEE LEE, MD, PHD[1]
DAVID R. JACOBS, JR., PHD[2,3]

OBJECTIVE — Low-level exposure to some persistent organic pollutants (POPs) has recently become a focus because of their possible link with the risk of diabetes.

RESULTS — Compared with subjects with serum concentrations below the limit of detection, after adjustment for age, sex, race and ethnicity, poverty income ratio, BMI, and waist circumference, diabetes prevalence was strongly positively associated with lipid-adjusted serum concentrations of all six POPs. When the participants were classified according to the sum of category numbers of the six POPs, adjusted odds ratios were 1.0, 14.0, 14.7, 38.3, and 37.7 (P for trend < 0.001). The association was consistent in stratified analyses and stronger in younger participants, Mexican Americans, and obese individuals.

Response to Porta DIABETES CARE, NOVEMBER 2006

Association Between Serum Concentrations of Persistent Organic Pollutants and Insulin Resistance Among Nondiabetic Adults

Results from the National Health and Nutrition Examination Survey 1999–2002

DUK-HEE LEE *Diabetes Care* 30:622–628, 2007

OC pesticides and nondioxin-like PCBs may be associated with type 2 diabetes risk by increasing insulin resistance,

POPs may interact with obesity to increase the risk of type 2 diabetes.

Response to Porta DIABETES CARE, NOVEMBER 2006

THE LANCET
Vol 368 August 12, 2006 *Miquel Porta*

Persistent organic pollutants and the burden of diabetes

When assessing the mechanisms linking diet, fat intake, obesity, and diabetes, persistent organic pollutants should also be considered. We need a better understanding of the burden of diabetes that these pollutants might contribute to cause.

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Exposed individuals and exposed populations

THE LANCET
Vol 368 August 12, 2006 *Miquel Porta*

Persistent organic pollutants and the burden of diabetes

Studies from the USA[1,2] have drawn attention to the possibility that persistent organic pollutants might contribute to cause diabetes.[3–6]

Because they contaminate virtually all people, even if they confer only a low individual risk of diabetes, these pollutants might have a substantial overall population effect.[10]

Clinical and Experimental Allergy, **36**, 1236–1241 2006

Early exposure to dichlorodiphenyldichloroethylene, breastfeeding and asthma at age six

J. Sunyer*†, M. Torrent‡, R. Garcia-Esteban*, N. Ribas-Fitó*, D. Carrizo§, I. Romieu¶, J. M. Antó*† and J. O. Grimalt§

Results At birth and 4 years of age, all children had detectable levels of DDE (median 1 ng/mL and 0.8 ng/mL, respectively). From birth to age 4, the mean DDE level among children with artificial feeding decreased by 72%, while among breastfed children it increased by 53%. Diagnosed asthma and persistent wheezing were associated with DDE at birth [odds ratio (OR) for an increase in 1 ng/mL, OR = 1.18, 95% confidence interval (95% CI) = 1.01–1.39 and OR = 1.13, 95% CI = 0.98–1.30, respectively], but not with DDE at 4 years. Neither breastfeeding nor atopy modified these associations ($P > 0.3$). Breastfeeding protected against diagnosed asthma (OR = 0.33, 95% CI = 0.08–0.87) and wheezing (OR = 0.53, 95% CI = 0.34–0.82) in children with low and high DDE levels at birth.

Conclusion In a community without known dichlorodiphenyltrichloroethane environmental releases, this study strengthens the evidence for an effect of DDE on asthma by measuring the disease at age 6 and does not support the hypothesis that DDE modifies the protective effect of breastfeeding on asthma.

Our children inherit the toxic burden of our planet.

The contamination of the general healthy population by organochlorine compounds, other PTS, and other Environmental Chemical Agents is a fact of relevance for public health.

It also has important consequences for environmental, food, industrial and economic policies.

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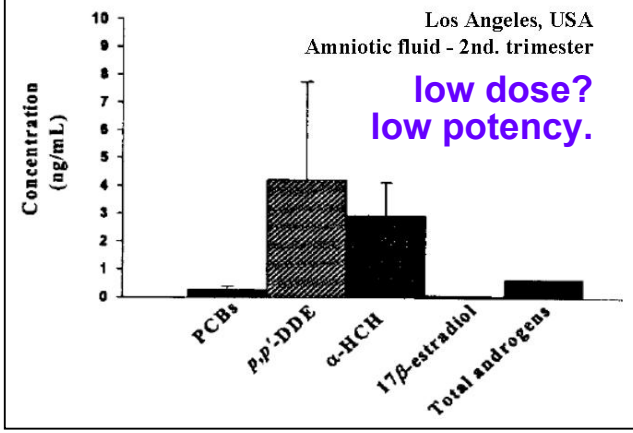
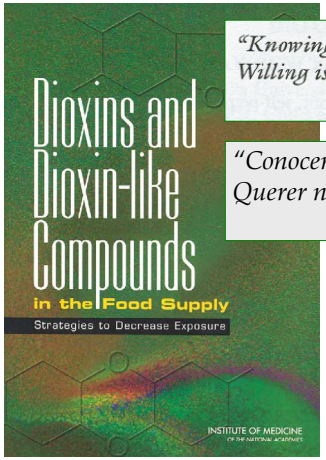
Exposed individuals and
exposed populations

Foster W, et al. J Clin Endocrinol Metab 2000; 85: 2954-7.



- **Most countries lack population indicators on the effects that environmental agents have on human health.**
- **Several government levels have a role in the monitoring of biological levels of PTS among humans in order to assess the risks of adverse health effects.**
- **Surveillance of contamination of the general population by PTS is necessary to fulfil the governments' mission to protect the public health.**

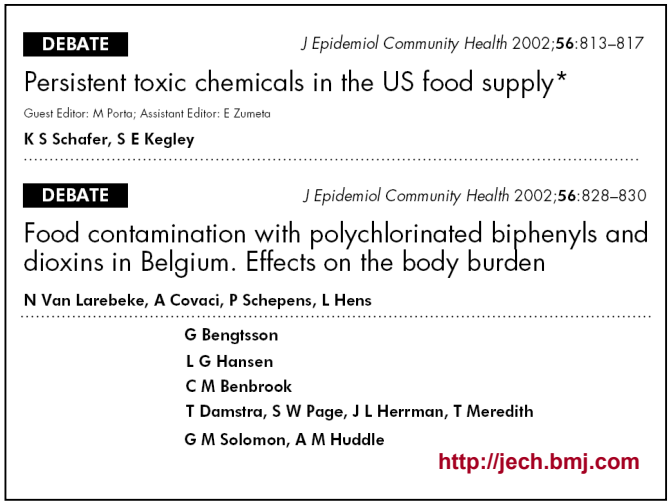
- ✓ **PTS are present at 'low doses' in many fatty foods.**
- ✓ **PTS are commonly detected in human beings...**
- ✓ **... at concentrations that at mid- and long-term, and in combination with other factors may contribute to cause effects clinically and –particularly– socially relevant.**



"Knowing is not enough; we must apply. Willing is not enough; we must do."
—Goethe

"Conocer no basta; debemos aplicar. Querer no basta; debemos hacer."
–Goethe

2003
THE NATIONAL ACADEMIES PRESS
Washington, D.C.
www.nap.edu



DEBATE *J Epidemiol Community Health* 2002;**56**:813–817

Persistent toxic chemicals in the US food supply*

Guest Editor: M Porta; Assistant Editor: E Zumeta

K S Schafer, S E Kegley

DEBATE *J Epidemiol Community Health* 2002;**56**:828–830

Food contamination with polychlorinated biphenyls and dioxins in Belgium. Effects on the body burden

N Van Larebeke, A Covaci, P Schepens, L Hens

G Bengtsson
L G Hansen
C M Benbrook
T Damstra, S W Page, J L Herrman, T Meredith
G M Solomon, A M Huddle

http://jech.bmj.com

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Miquel Porta - 21 Sept. 2008 - Porto Alegre

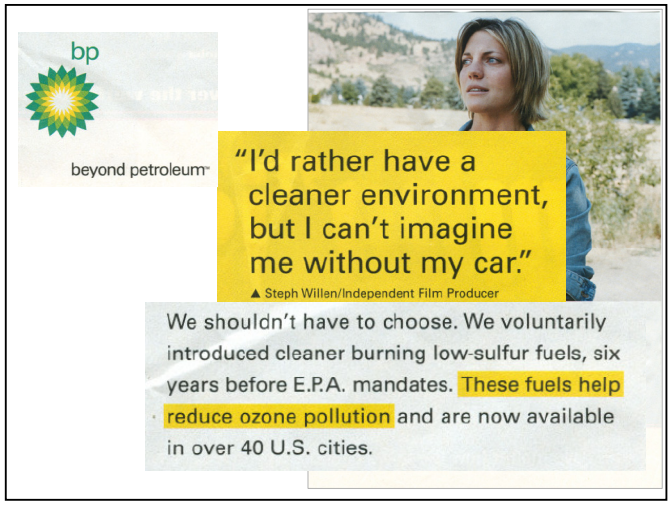
Exposed individuals and exposed populations

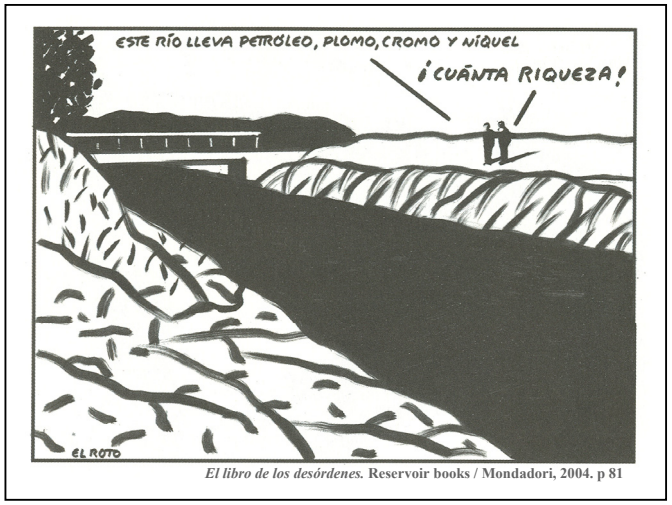
PTS accumulate in the biological sense...

PTS travel great distances: through the atmosphere as well as through the international trade channels for human food, animal feed, fat...

PTS also accumulate in the cultural environment of our societies: PTS are deeply rooted in our lifestyles.

Occupat Environ Med 2002.
J Epi Community Health 2002.
Int J Occupat Environ Health 2003.
J Epi Community Health 2004.





El libro de los desórdenes. Reservoir books / Mondadori, 2004. p 81

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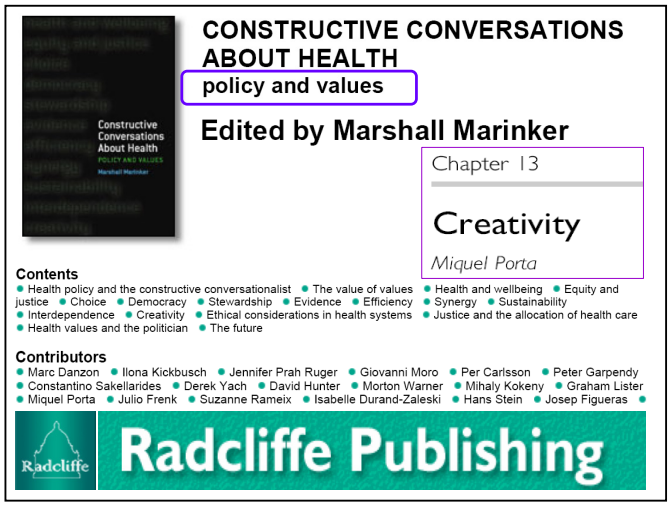
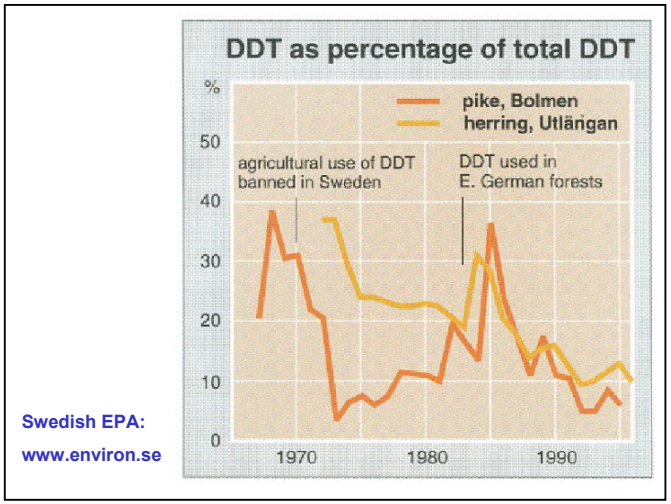
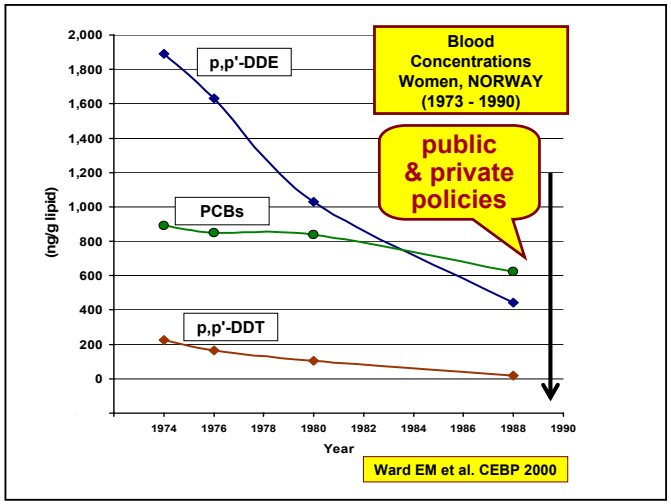
Exposed individuals and exposed populations





Swedish EPA:
www.environ.se



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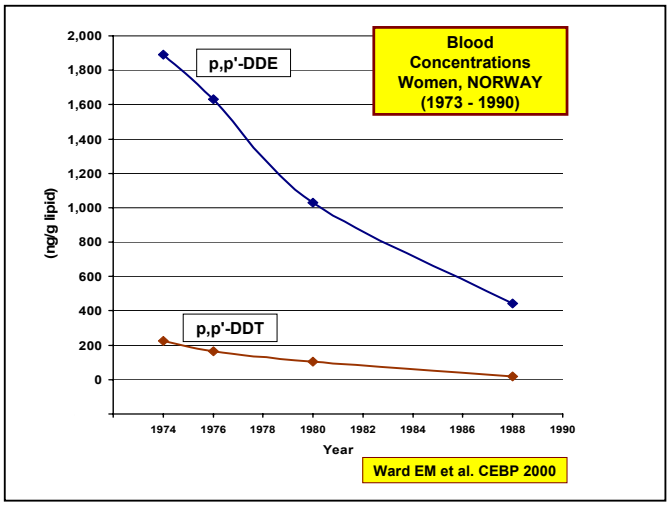
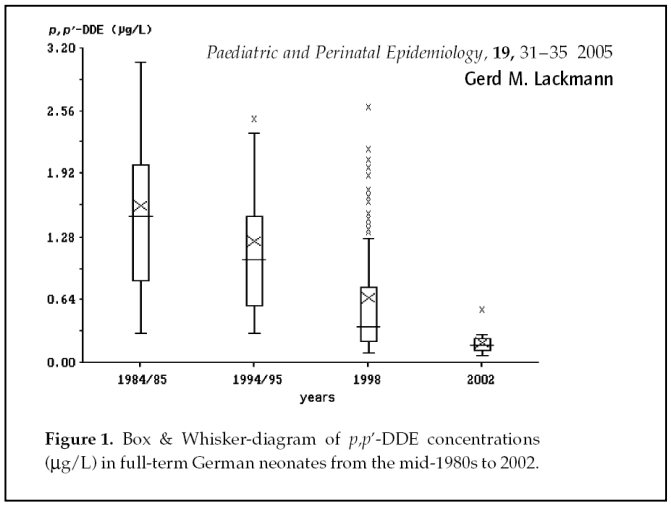
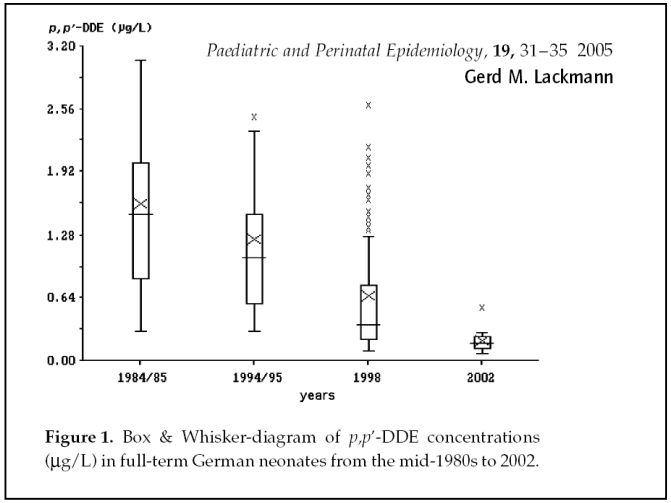




Paediatric and Perinatal Epidemiology, **19**, 31–35 2005
Gerd M. Lackmann

Figure 1. Box & Whisker-diagram of *p,p'*-DDE concentrations (µg/L) in full-term German neonates from the mid-1980s to 2002.



Paediatric and Perinatal Epidemiology, **19**, 31–35 2005
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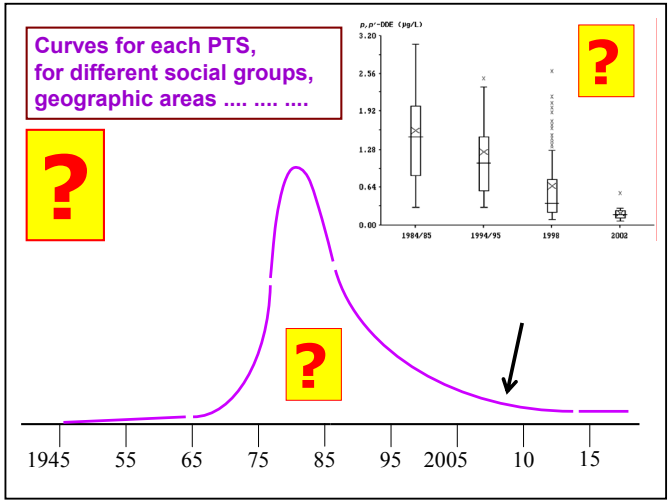
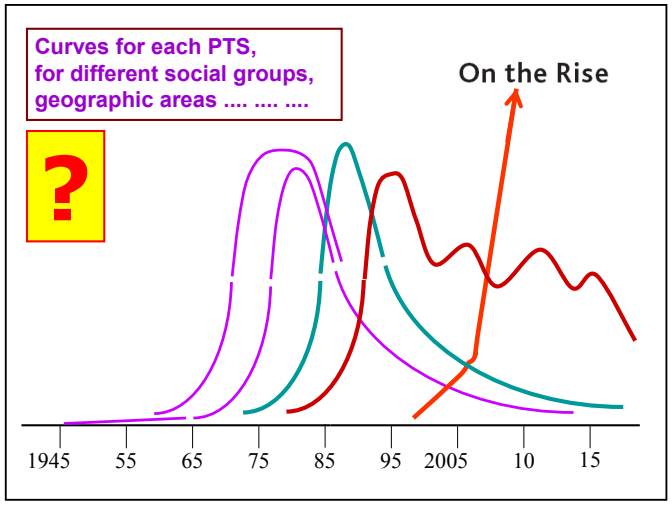
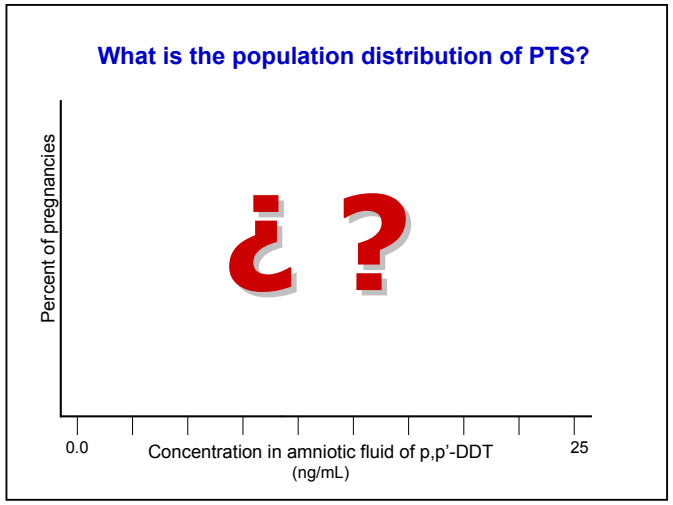
Miquel Porta - 21 Sept. 2008 - Porto Alegre

Exposed individuals and
exposed populations

Spraying it about — in 1946, whole districts of Athens were sprayed with DDT from low-flying aircraft in attempts to halt the spread of a cholera epidemic by flies.
NATURE 1995; 375: 538-9.







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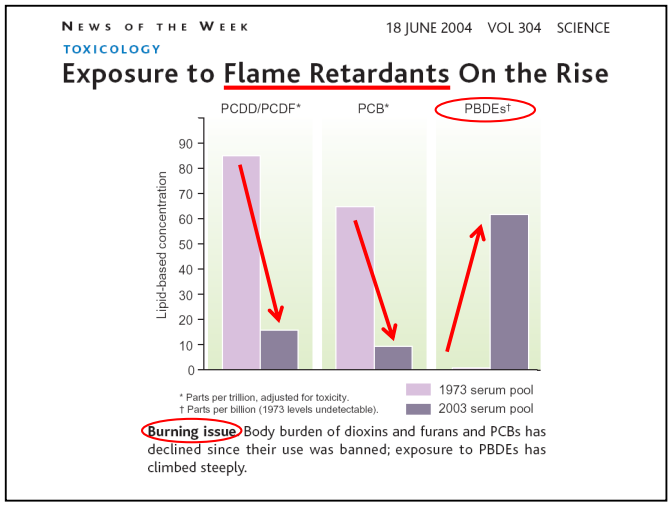
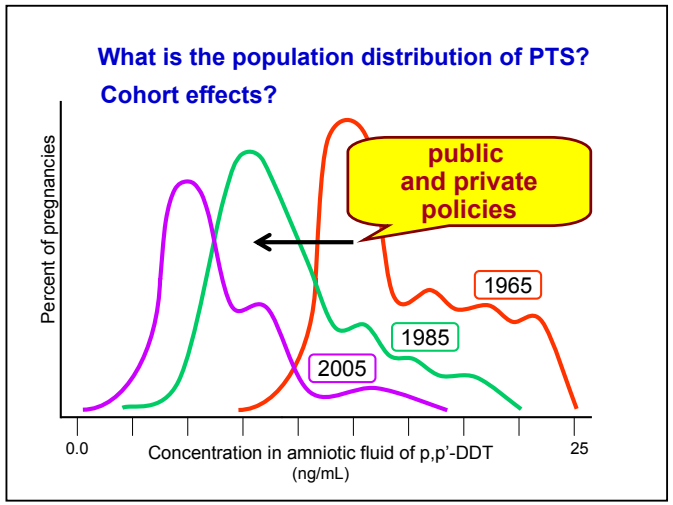
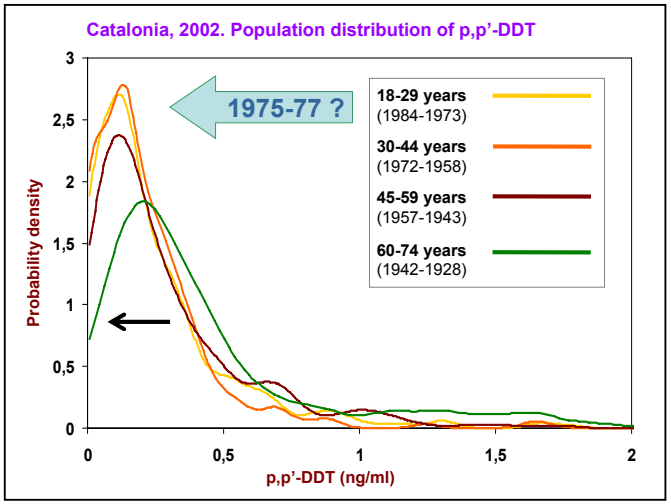
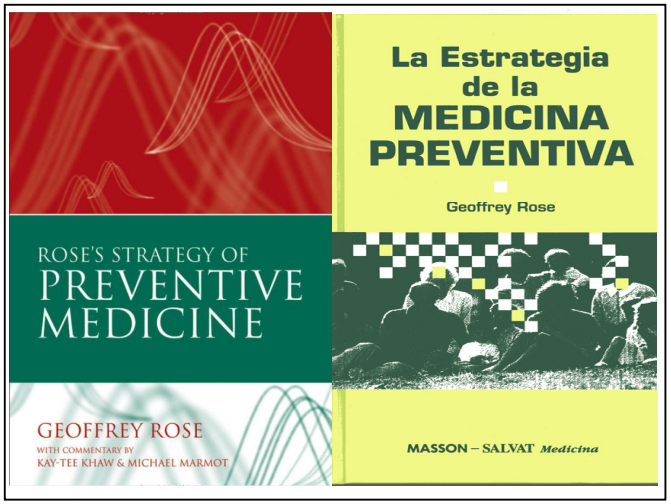
exposed populations









Other papers of [on] Prof. G. Rose:

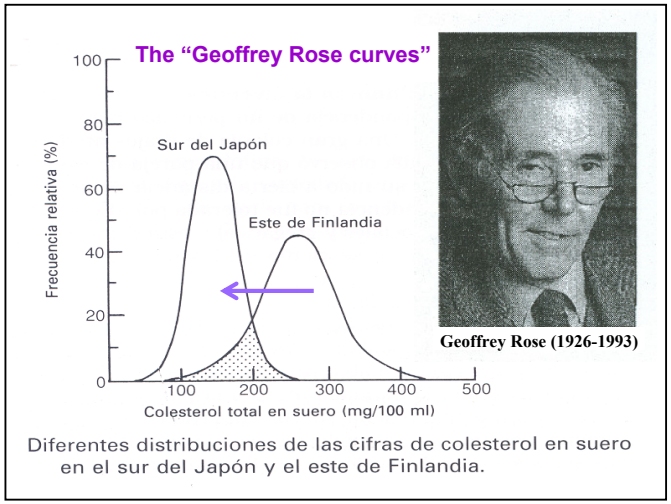
– Rose G. Strategy of prevention: lessons from cardiovascular disease. BMJ 1981.

– Rose G. Prophylaxis with beta-blockers and the community. Br J Clin Pharmacol 1982.

– Rose G, Day S. The population mean predicts the number of deviant individuals. BMJ 1990.

– [Hofman A, Vandenbroucke JP. Geoffrey Rose's big idea. BMJ 1992].

– [Porta M. PTS: Exposed individuals and exposed populations. JECH 2004].



Diferentes distribuciones de las cifras de colesterol en suero en el sur del Japón y el este de Finlandia.

J Epidemiol Community Health 2004;58:534–535.

Persistent toxic substances: exposed individuals and exposed populations

On the lintel of his classic *The strategy of preventive medicine*,[1] Geoffrey Rose (1926–1993) inscribed these words of Fyodor Dostoyevsky (1821–1881): "We are all responsible for all". The idea that as citizens and societies we have shared, common responsibilities in front of threats to health is central to epidemiology, public health, even to clinical medicine… and to virtually all other professions and scientific disciplines. Why should it not also be relevant to urbanism, pedagogy, biology, or chemistry? It is of course also central to literature and most other forms of artistic expression.

J Epidemiol Community Health 2004;58:534–535.

While these findings should not leave us indifferent, they are not particularly alarming. Mainly, because similar results would be obtained in most of us. But, would it not be more coherent to say that similar results would be obtained "in our populations",[1 22] should we have the appropriate surveillance systems in place? Do we not know that there's no effective individual escape from PTS? Then the path to follow is not to perform individual measurements of PTS, but population surveillance and control of PTS. Indeed, "Geoffrey Roses's big idea"[23] (changing the population distribution of a risk factor prevents more burden of disease than targeting people at high risk) is perfectly relevant to PTS—perhaps even more than to classic risk factors for chronic diseases.[4–8] The only way forward is to shift the population distribution of PTS.

XVIII IEA World Congress of Epidemiology
Miquel Porta - 21 Sept. 2008 - Porto Alegre
Exposed individuals and exposed populations

J Epidemiol Community Health 2004;58:534–535.

**Geoffrey Rose's big idea...
is even more relevant for environmental exposures as PTS because there is very little or nothing an individual may do...**

individual escape from PTS? Then the path to follow is not to perform individual measurements of PTS, but population surveillance and control of PTS. Indeed, "Geoffrey Roses's big idea"[23] (changing the population distribution of a risk factor prevents more burden of disease than targeting people at high risk) is perfectly relevant to PTS—perhaps even more than to classic risk factors for chronic diseases.[4–8] The only way forward is to shift the population distribution of PTS.

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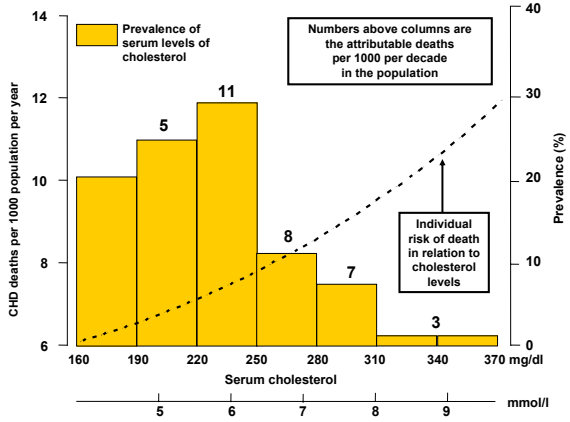
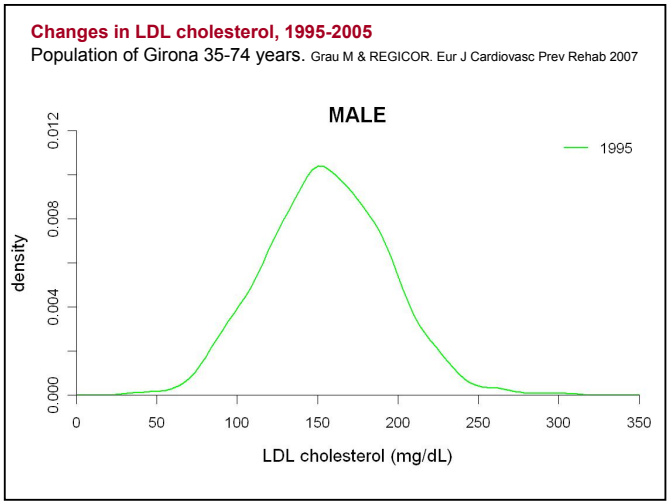
The dominance of deaths (coronary heart disease) in those with average levels of a risk factor



Source: WHO, Technical Report Series 678, 1982

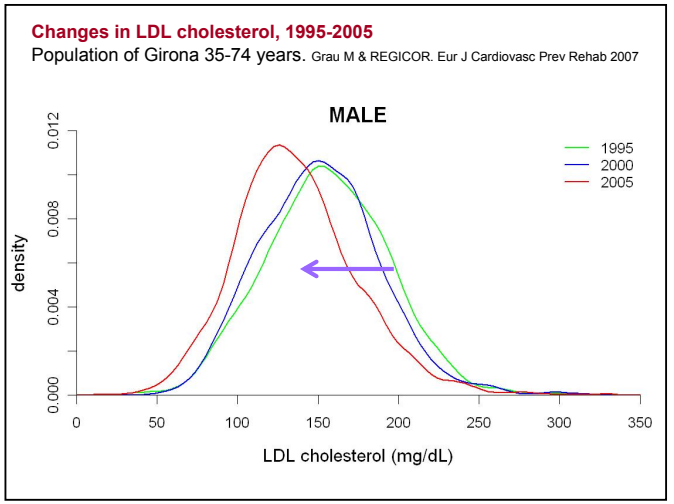
Changes in LDL cholesterol, 1995-2005

Population of Girona 35-74 years. Grau M & REGICOR. Eur J Cardiovasc Prev Rehab 2007



Changes in LDL cholesterol, 1995-2005

Population of Girona 35-74 years. Grau M & REGICOR. Eur J Cardiovasc Prev Rehab 2007



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Changes in LDL cholesterol, 1995-2005

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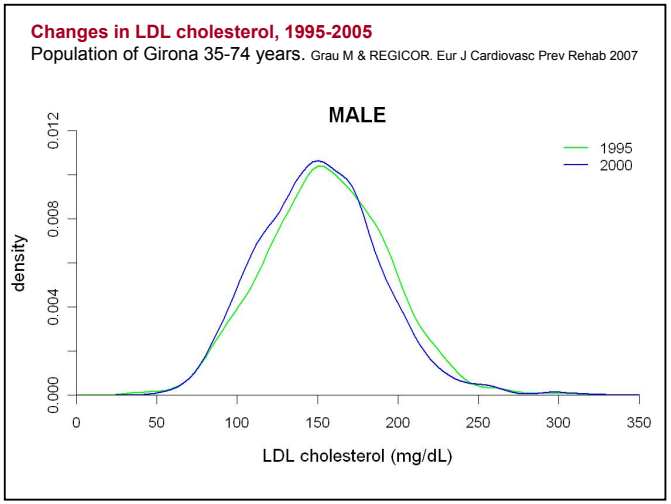

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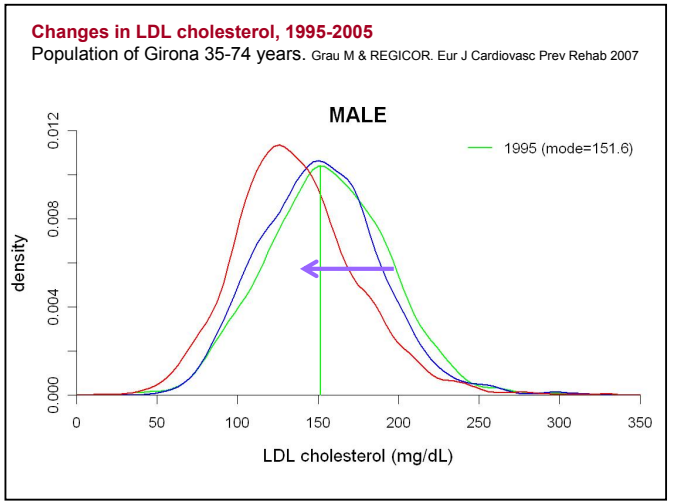

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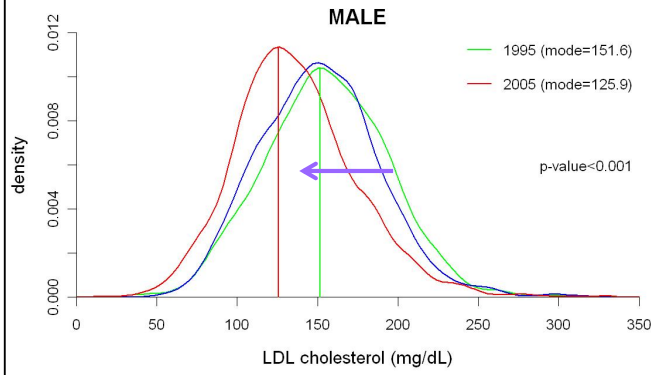
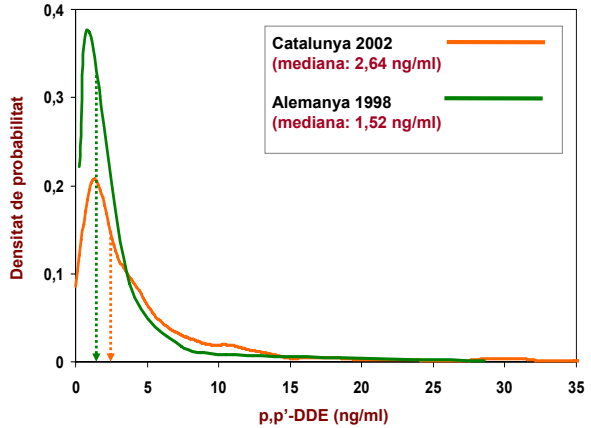
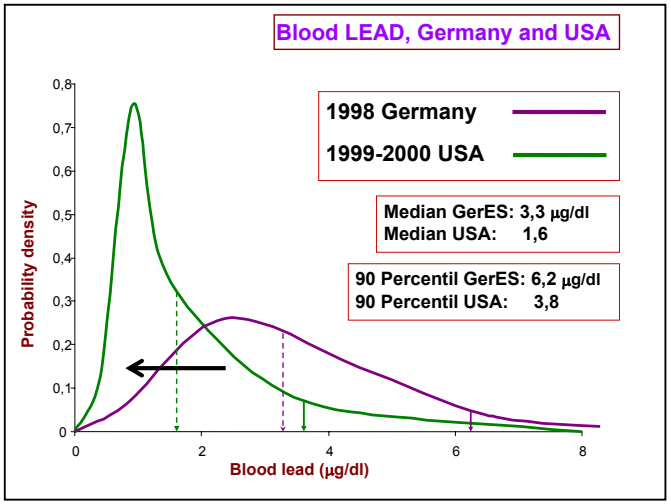


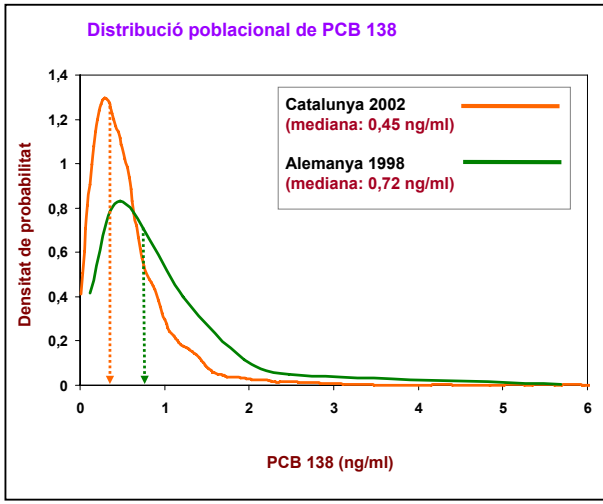
Distribució poblacional de p,p'-DDE

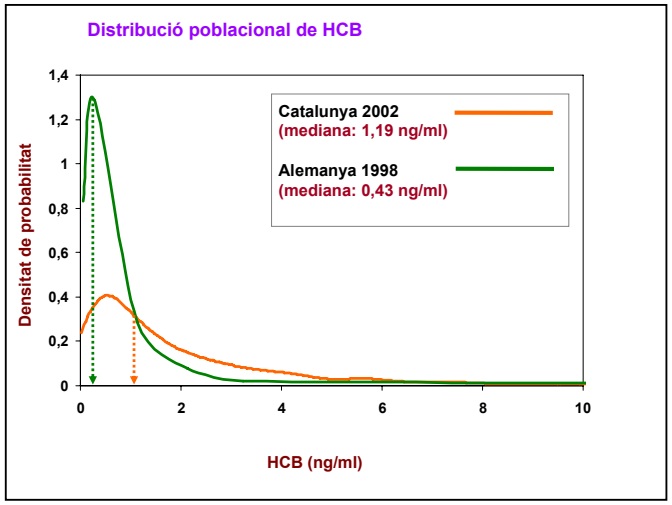


Blood LEAD, Germany and USA



Distribució poblacional de PCB 138





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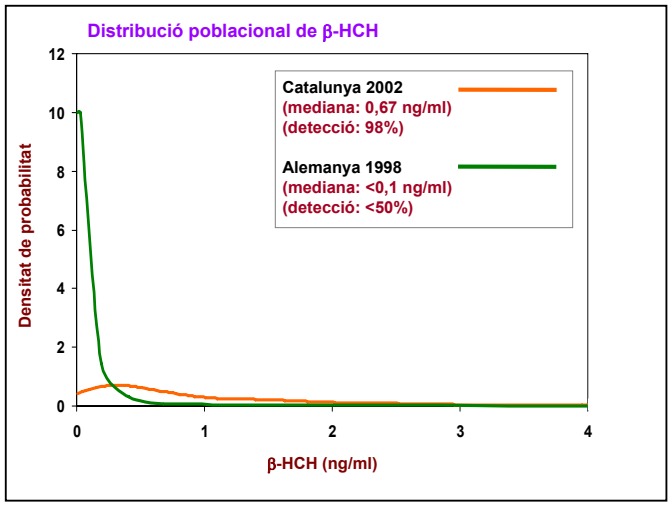

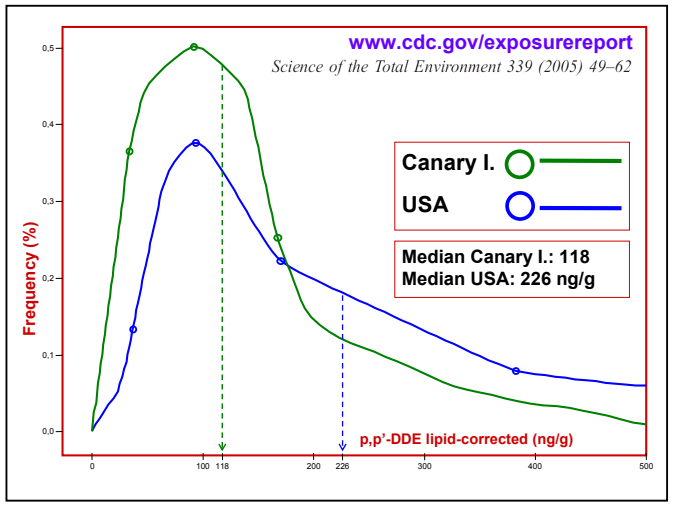

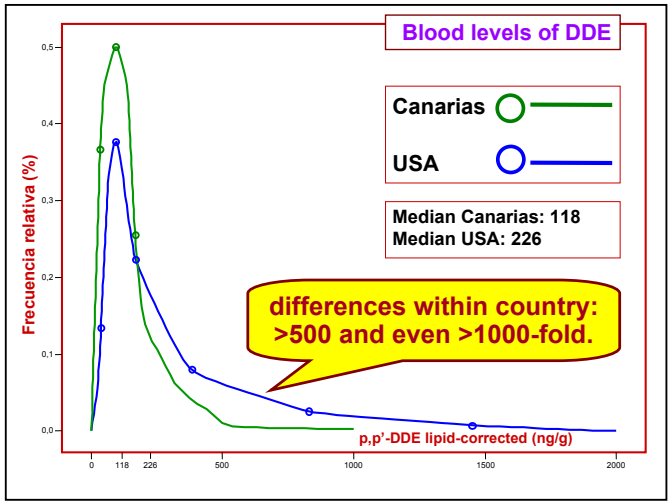

Table 154. Hexachlorobenzene (lipid adjusted) www.cdc.gov/exposurereport

Geometric mean and selected percentiles of serum concentrations (nanograms/gram [ng/g] of lipid or parts-per-billion on a lipid weight basis) for the U.S. population aged 12 years and older, National Health and Nutrition Examination Survey, 1999-2000.

	Geometric mean (95% conf. Interval)	Selected percentiles (95% confidence interval)						Sample size
		10th	25th	50th	75th	90th	95th	
Total, age 12 and older	*	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	1702
Age group								
12-19 years	*	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	591
20 years and older	*	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	1111
Gender								
Males	*	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	807
Females	*	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	895
Race/ethnicity								
Mexican Americans	*	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	583
Non-Hispanic blacks	*	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	350
Non-Hispanic whites	*	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	636

< LOD means less than the limit of detection, which averaged 60.5 ng/g of lipid (SD 19.3, maximum value 118).
* Not calculated. Proportion of results below limit of detection was too high to provide a valid result.

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Miquel Porta - 21 Sept. 2008 - Porto Alegre

Exposed individuals and
exposed populations

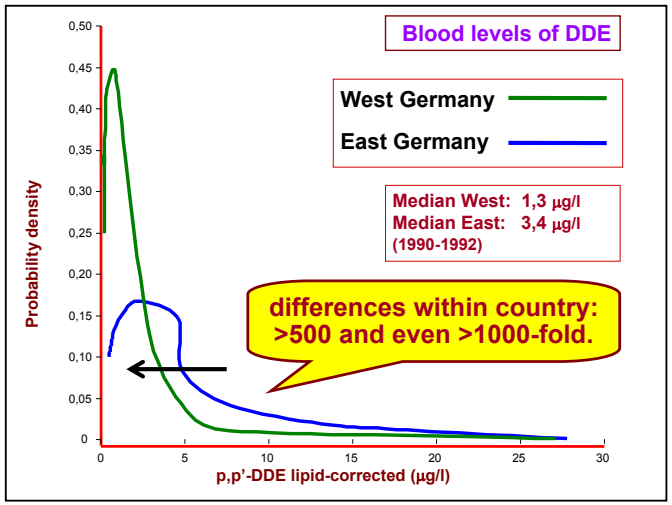


Table 157. *p,p'*-DDT (lipid adjusted) www.cdc.gov/exposurereport

Geometric mean and selected percentiles of serum concentrations (nanograms/gram [ng/g] of lipid or parts-per-billion on a lipid weight basis) for the U.S. population aged 12 years and older, National Health and Nutrition Examination Survey, 1999-2000.

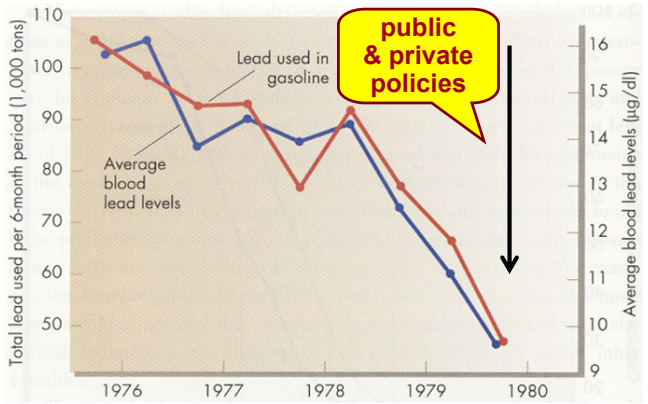
	Geometric mean (95% conf. Interval)	Selected percentiles (95% confidence interval)						Sample size
		10th	25th	50th	75th	90th	95th	
Total, age 12 and older	*	< LOD	< LOD	< LOD	< LOD	< LOD	27.0 (<LOD-34.0)	1679
Age group								
12-19 years	*	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	677
20 years and older	*	< LOD	< LOD	< LOD	< LOD	< LOD	29.4 (22.2-37.3)	1002
Gender								
Males	*	< LOD	< LOD	< LOD	< LOD	< LOD	24.3 (<LOD-34.1)	799
Females	*	< LOD	< LOD	< LOD	< LOD	< LOD	29.1 (22.5-34.0)	880
Race/ethnicity								
Mexican Americans	*	< LOD	< LOD	< LOD	< LOD	59.7 (28.9-150)	150 (63.4-493)	635
Non-Hispanic blacks	*	< LOD	< LOD	< LOD	< LOD	< LOD	25.7 (<LOD-63.9)	356
Non-Hispanic whites	*	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	564

< LOD means less than the limit of detection, which averaged 10.6 ng/g of lipid (SD 3.4, maximum value 20.7).
* Not calculated. Proportion of results below limit of detection was too high to provide a valid result.

www.cdc.gov/exposurereport

Serum concentrations of p,p'-DDE (lipid-corrected, in ng/g) in the US general population

	Geometric mean (95% conf. Interval)	Selected percentiles (95% confidence interval)						Sample size
		10th	25th	50th	75th	90th	95th	
Total, age 12 and older	260 (234-289)	74.2 (66.1-84.2)	114 (99.8-129)	226 (191-267)	538 (485-609)	1120 (991-1290)	1780 (1520-2230)	1964
Age group								
12-19 years	118 (101-137)	45.9 (34.9-56.6)	69.8 (59.2-80.4)	108 (90.6-132)	185 (141-233)	343 (255-479)	528 (364-644)	686
20 years and older	297 (267-330)	86.0 (75.2-96.7)	130 (115-150)	269 (229-303)	626 (538-697)	1250 (1100-1420)	1990 (1570-2510)	1278
Gender								
Males	249 (221-281)	77.6 (68.6-88.2)	119 (101-133)	222 (182-266)	489 (383-570)	985 (756-1130)	1350 (1190-1610)	937
Females	270 (241-302)	68.9 (55.1-82.5)	112 (96.0-129)	228 (191-286)	604 (516-697)	1320 (1100-1600)	2150 (1650-2750)	1027
Race/ethnicity								
Mexican Americans	674 (572-795)	154 (133-214)	300 (252-370)	623 (505-750)	1350 (1090-1660)	3090 (2100-4610)	4940 (3280-7810)	657
Non-Hispanic blacks	295 (253-344)	62.2 (56.9-80.5)	113 (98.3-128)	203 (164-253)	452 (392-571)	1340 (974-1910)	2160 (1470-4010)	416
Non-Hispanic whites	217 (193-244)	73.0 (63.2-82.2)	107 (94.5-127)	197 (175-238)	459 (372-513)	852 (693-1010)	1220 (1040-1410)	732



Stolley PD & Lasky T. ***Investigating disease patterns. The science of epidemiology.*** **New York: Scientific American Library, 1995.**

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20 years and older	*	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	1111
Gender								
Males	*	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	807
Females	*	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	895
Race/ethnicity								
Mexican Americans	*	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	583
Non-Hispanic blacks	*	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	350
Non-Hispanic whites	*	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	636

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PRESS RELEASES Rapid

MEMO/03/219

Bruxelles, 6 November 2003

Presence of persistent chemicals in the human body results of Commissioner Wallstrom's blood test

The presence of persistent chemicals in the human body and their potential harmful effects is amongst the problems addressed by the European Commission's recent proposal for a new regulatory framework for chemicals (REACH - see IP/03/1477). To illustrate this problem, Margot Wallström, European Commissioner for Environment, submitted a sample of her blood for testing. The results of these tests, which give a record of the chemicals to which Mrs Wallström has been exposed and which have accumulated in her body, have been published by the European Commission today.

PRESS RELEASES Rapid

REACH

The presence of persistent and bio-accumulating substances in the blood test of Mrs Wallström, shows that nobody can escape contamination by chemicals. Despite intense research on some of the chemicals, there is a general lack of knowledge about the effects on human health and the environment of more than 99 % of the total volume of chemicals on the market. It is therefore essential to systematically examine all chemicals used in significant quantities in the EU.

↓

nobody can escape contamination by chemicals.

on the same boat."

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Exposed individuals and
exposed populations

Dostoievski:
"We are all responsible for all."

Geoffrey Rose (1926 - 1993)

La estrategia de la medicina preventiva.

Oxford: Oxford University Press, 1992.

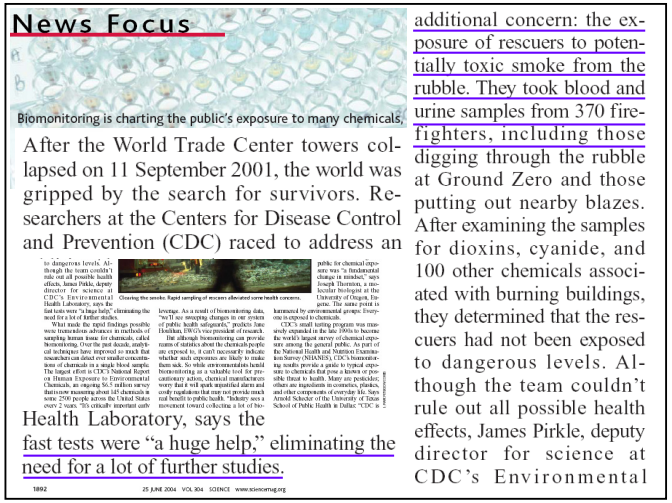
on the same boat."

Risk privatization?
As individuals there's little we can do to "defend ourselves" from certain environmental risks.
"We are all on the same boat."

Should we know what are the concentrations of PTS in the population?

J Epidemiol Community Health 2004;**58**:534–535.
Persistent toxic substances: exposed individuals and exposed populations

Sould we analyze our blood concentrations of PTS?



News Focus

Biomonitoring is charting the public's exposure to many chemicals

After the World Trade Center towers collapsed on 11 September 2001, the world was gripped by the search for survivors. Researchers at the Centers for Disease Control and Prevention (CDC) raced to address an additional concern: the exposure of rescuers to potentially toxic smoke from the rubble. They took blood and urine samples from 370 firefighters, including those digging through the rubble at Ground Zero and those putting out nearby blazes. After examining the samples for dioxins, cyanide, and 100 other chemicals associated with burning buildings, they determined that the rescuers had not been exposed to dangerous levels. Although the team couldn't rule out all possible health effects, James Pirkle, deputy director for science at CDC's Environmental Health Laboratory, says the fast tests were "a huge help," eliminating the need for a lot of further studies.

1892 25 JUNE 2004 VOL 304 SCIENCE www.sciencemag.org

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Exposed individuals and exposed populations

What made the rapid findings possible were tremendous advances in methods of sampling human tissue for chemicals, called biomonitoring. Over the past decade, analytical techniques have improved so much that researchers can detect ever smaller concentrations of chemicals in a single blood sample. The largest effort is CDC's National Report on Human Exposure to Environmental Chemicals, an ongoing $6.5 million survey that is now measuring about 145 chemicals in some 2500 people across the United States every 2 years. "It's critically important early intelligence about compounds that are getting into people," says Philip Landrigan of Mount Sinai School of Medicine in New York City.

Biomonitoring is hot. With lab costs down, environmental groups are commissioning their own analyses of chemical exposures. Last year, the Environmental Working Group (EWG) in Washington, D.C., released a report entitled *Body Burden: The Pollution in People* that examined the levels of 210 chemicals in nine people. In April, the World Wildlife Federation tested for 101 compounds in 39 members of the European Parliament. The impetus is clear: Such studies can generate headlines and political leverage. As a result of biomonitoring data, "we'll see sweeping changes in our system of public health safeguards," predicts Jane Houlihan, EWG's vice president of research.

Biomonitoring's strong suit is that it directly measures the amount of a chemical in bodily fluids or tissues. Those exposure data are much more relevant for risk assessments than are extrapolations from chemical concentrations in soil, air, or water. What you really want to know is not whether asbestos is in the walls but whether it's in your lungs, says Schecter: "If you didn't get it in your body, you don't need to worry about health effects."

What's normal?

What does it mean?

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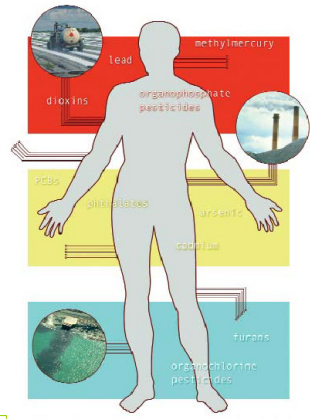
But although biomonitoring can provide reams of statistics about the chemicals people are exposed to, it can't necessarily indicate whether such exposures are likely to make them sick. So while environmentalists herald biomonitoring as a valuable tool for precautionary action, chemical manufacturers worry that it will spark unjustified alarm and costly regulations that may not provide much real benefit to public health. "Industry sees a movement toward collecting a lot of biomonitoring data prematurely, before we know what to do with it," says Nancy Doerrer, scientific program manager at ILSI Health and Environmental Sciences Institute, an industry-funded group in Washington, D.C. What's

What's normal?

What does it mean?



What's normal?

What does it mean?

Worry? EWG found, on average, 91 chemicals in people. For many, health effects are unknown.

For EPA, the problem is that the pace of biomonitoring has eclipsed that of the basic epidemiology and toxicology needed to reveal whether a chemical causes harm.

What's normal?

What does it mean?

25 JUNE 2004 VOL 304 SCIENCE www.sciencemag.org

NO to indifference, NO to fear.

NO to paternalism, NO to opacity.

YES to measures of collective protection.

YES to research, YES to innovation.

YES to society of knowledge: apply it.

YES to information, YES to awareness.

YES to active citizens.

YES to law enforcement.

YES to ecologic agriculture... and more...

alliances

Amigos de la Tierra · CC.OO. · cima (Científicos por el medio ambiente) · GREENPEACE · WWF · CECU (Confederación de Consumidores y Usuarios) · ECOLOGISTAS en acción · SEO/BirdLife · UGT · UPA

CIENTÍFICOS, ECOLOGISTAS, CONSUMIDORES Y SINDICATOS EXIGEN AL GOBIERNO QUE RATIFIQUE EL CONVENIO DE ESTOCOLMO

El Ejecutivo tiene paralizada la ratificación a pesar de que ya ha pasado el trámite parlamentario ante el Congreso y el Senado

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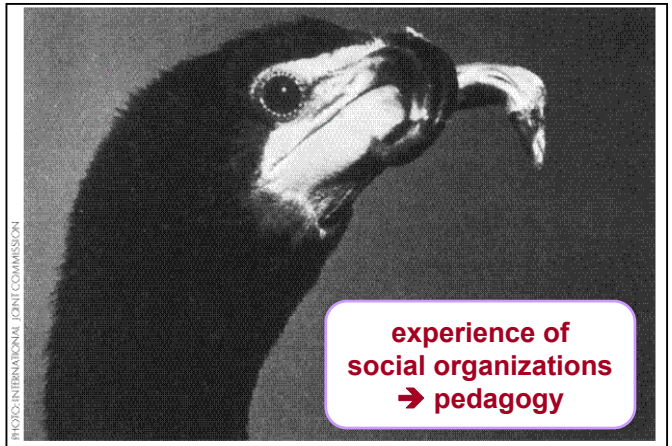

Adverse effects of POPs in Great Lakes wildlife, such as the deformed bill of this young cormorant, have helped spur international action.

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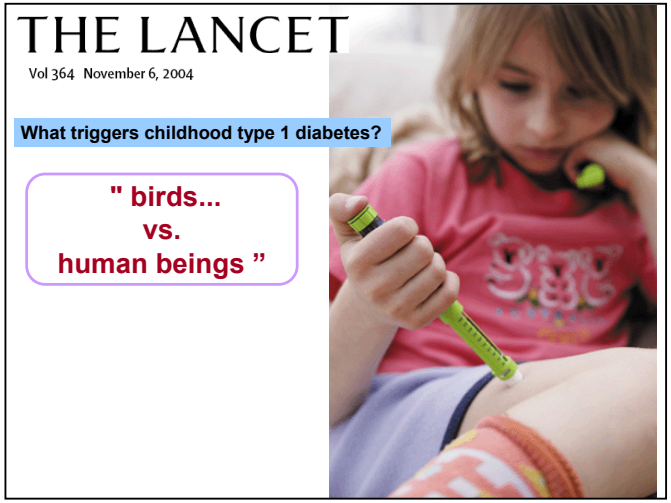
exposed populations



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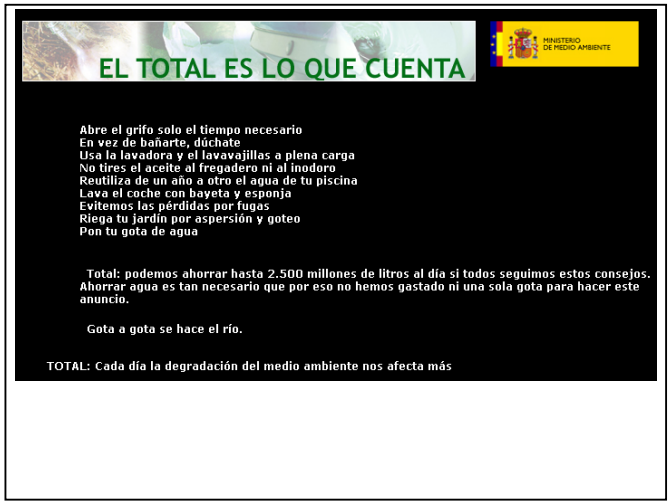


WORLD•WATCH 2004

Abre los ojos, sin miedo

Por una pedagogía científica culturalmente sostenible

Miquel Porta Serra

Debemos hallar *formas de pedagogía científica más sostenibles culturalmente* no sólo por razones de eficiencia, si no, sobre todo, para no causar más «efectos adversos»: miedos, ansiedades innecesarias, estigmatización, discriminación, medicalización, dependencia, otras formas de iatrogenia, gasto socialmente estéril, etc.). Porque –a juicio de CiMA– debemos estar radicalmente en contra de provocar más miedo, angustia y alienación. Porque deseamos promover formas de vida «autónomas, solidarias y alegres». Y porque, como parte inseparable de todo ello, queremos preservar nuestra identidad cultural. La que se basa, por ejemplo, en el placer de reunirse alegremente en torno a una buena mesa... *Lo que no puede ser es que las personas malvivamos en un estado cuasi-permanente de duda, sospecha, desafección, rechazo, repugnancia o asco* ante el medio ambiente en el que vivimos y *somos*.

Miquel Porta Serra es profesor de salud pública de la Universidad Autónoma de Barcelona. Presidente de Científicos por el Medio Ambiente (CiMA) www.cima.org.es.

EL PAÍS, martes 18 de mayo de 2004

Salud

with whom do we assess their cultural impact?

JORDI SUNYER Y NÚRIA RIBAS-FITÓ / Investigadores del IMIM de Barcelona

"La lactancia materna es beneficiosa a pesar del DDT que contiene"

DAVID SEGARRA. **Barcelona** La leche humana no sólo contiene nutrientes para el bebé. También es una importante fuente de numerosos contaminantes, entre ellos DDT. Un equipo de investigadores médicos acaba de determinar que el DDT contenido en la leche afecta negativamente a la inteligencia infantil. Pero, aun así, los beneficios de la lactancia materna superan este inconveniente, según los doctores Jordi Sunyer y Núria Ribas-Fitó, del Instituto Municipal de Investigaciones Médicas de Barcelona.

Pregunta. ¿Tenemos mucho DDT en nuestro cuerpo?

Núria Ribas-Fitó. Los niveles de DDE [metabolito de descomposición del DDT] en el cuerpo humano en España son relativamente altos. Algunos estudios indican que tenemos el doble de contaminante que el promedio de países europeos, aproximadamente. Se trata de DDT que fue

Núria Ribas-Fitó y Jordi Sunyer.

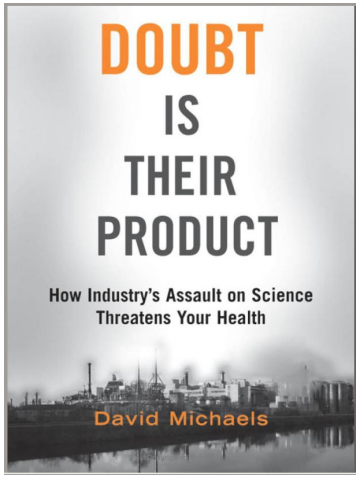
La red Inma examina a 5.000 niños

da temprana en la guardería, que estimula enormemente a los niños. En este contexto, los contaminantes tienen peso menor.

P. ¿Es recomendable la lactancia?

J. S. Los niños que lactan incorporan más contaminantes, pero obtienen mejores puntuaciones en los tests. La conclusión principal de nuestro estudio es que la lactancia contrarresta los efectos negativos del DDE.

N. R-F. En un grupo de 480 niños menorquines hemos comprobado que los niños que han seguido lactancia materna no sólo tienen un mejor desarrollo, sino una mejor sociabilidad a los cuatro años de vida. Y esto está relacionado con la duración de la lactancia. Por esto queremos saber qué sucede en las lactancias de corta duración, de tan sólo uno o dos meses, un tiempo suficiente para que pasen los tóxicos, pero muy corto para beneficiarse de la vertiente



OXFORD UNIVERSITY PRESS

May 2008

David Michaels **is a scientist and former government regulator. During the Clinton Administration, he served as Assistant Secretary of Energy for Environment, Safety and Health, responsible for protecting the health and safety of the workers, neighboring communities, and the environment surrounding the nation's nuclear weapons factories. He currently directs the Project on Scientific Knowledge and Public Policy at The George Washington University School of Public Health and Health Services. In 2006, he received the American Association for the Advancement of Science's Scientific Freedom and Responsibility Award for his work on behalf of nuclear weapons workers and for advocacy for scientific integrity**

EL PAÍS - Opinión - 12-12-2005

EL PAIS, 30 -10-2003

www.imim.es/programesrecerca/epidemiologia/en_documentsgrecm.html

Home > Research programmes > Epidemiology and public health >
Clinical and Molecular Epidemiology of Cancer
Scientific documents

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