

[Philippines]

## Mother Nature and Food Safety: The 21st Century Health Agenda\*<sup>1</sup>

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### SAFETY HAZARDS IN FOOD PRODUCTS

#### GENERAL HAZARDS FROM FOODS

A variety of safety hazards are associated with foods produced by any method. These can be categorized from greatest to least hazardous by their probability to cause an adverse health effect as:

- pathogenic microorganisms,
- nutrient imbalances,
- naturally occurring toxicants,
- environmental and industrial chemicals, including pesticides,
- food and feed additives,
- food alterations associated with genetic modification.

This categorization was first proposed by Wodicka (1982).



\*<sup>1</sup> This article is based on a presentation made at the Symposium “Ensuring Food Safety: An Important Challenge Today” held at the 30th CMAAO General Assembly and 51st Council Meeting, Yangon, Myanmar, on September 23-25, 2015.

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ABUNDANT CROPS



GARBAGE DUMPS

### PATHOGENIC MICROORGANISMS

- The need to focus more heavily on pathogenic microorganisms, and to implement preventive approaches such as HACCP, was established and supported by studies conducted over the past 15 years by the National Academy of Sciences, the Government Accounting Office, and the USDA.
- In 1994, the Council for Agricultural Science and Technology estimated that 6.5 to 33 million cases of food-borne illness and up to 9,000 deaths occur each year because of food-borne illness and related problems. However, public support for change in the food safety system did not truly begin to emerge until the 1993 outbreak of food-borne illness associated with Escherichia coli O157:H7 in undercooked hamburgers.
- Thus, a comprehensive strategy for change was developed with HACCP and pathogen reduction as the centerpiece.

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### HAZARD ANALYSIS CRITICAL CONTROL POINT (HACCP) REQUIREMENTS

- all slaughter plants should have standard operating procedures for sanitation;
- slaughter plants must test carcasses for generic Escherichia coli, an indicator of fecal contamination;
- all meat and poultry plants must implement HACCP systems as a means of preventing or controlling contamination from pathogens, as well as other hazards. Under HACCP, slaughter plants identify and evaluate the hazards that could affect the safety of their products and institute controls necessary to prevent those hazards from occurring or at a minimum, keep them within the acceptable limits;
- mandates performance standards for salmonella at slaughter and grinding plants.

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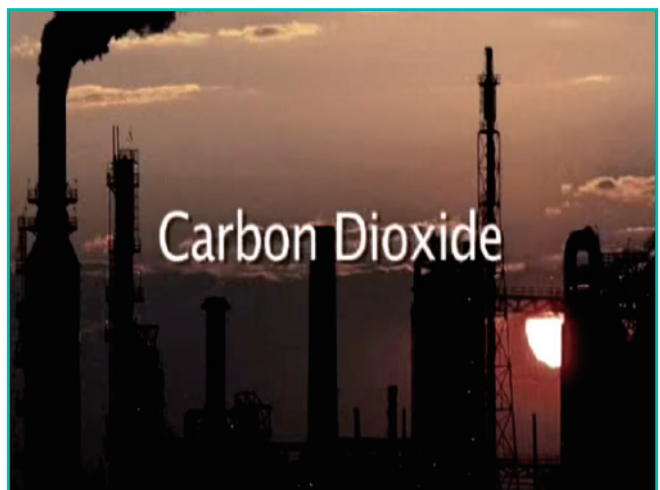


GARBAGE DUMPS



Methane





## INCREASED POLLUTION

- An undesirable consequence of the industrialization of agriculture and manufacturing is the release of chemicals to the environment. Not all food pollutants come from industrial processes, however. For example, dioxins and furans are contaminants released unintentionally into the environment as a result of both preindustrial combustion processes (e.g., the combustion of forests or brush) and modern combustion processes (e.g., industrial burning, landfill fires, structural fires) (IOM/NRC, 2003). Whether exposure to these pollutants has increased over the years depends on the pollutant, and the data needed to assess trends are often lacking (IOM, 2007).
- The bioaccumulation of pollutants in the food chain (e.g., methylmercury in seafood) has received a great deal of attention. The pollutants of concern may change over time as manufacturing processes evolve, but those that are persistent in the environment can be a chronic issue for public health and environmental agencies.

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## WATER AND WASTE MANAGEMENT

- From a processing standpoint, water quality is an extremely important issue. Water is obviously a key input into all food production processes, and water is a critical ingredient and should be evaluated in the same way as any other product ingredient. We should assume responsibility to demonstrate that the water we use during food production meets drinking water standards

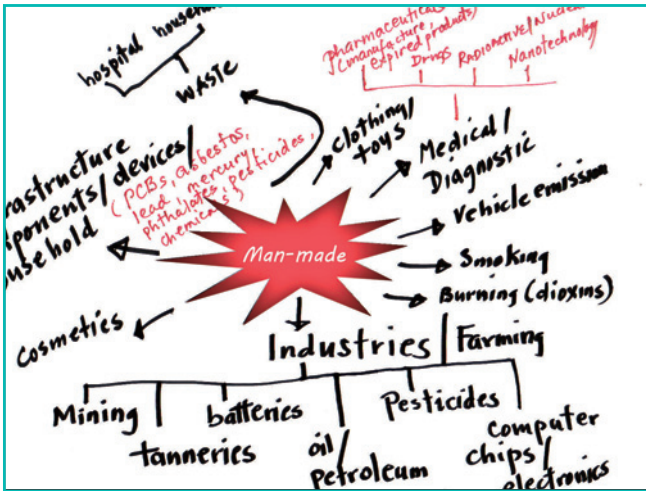
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## CLIMATE CHANGE AND THE FOOD CHAIN

- Climate change is doubly relevant to the food enterprise: not only may climate change affect food yields, but food production may contribute to climate change by releasing a substantial amount of greenhouse gases, such as carbon monoxide and nitrogen monoxide (Stern, 2007). Stern (2007), among others, has highlighted serious concerns regarding the effects of climate change on future food security, especially for populations in low-income countries that are already at risk of food insecurity.
- Climate change can affect food systems directly, by affecting crop production (e.g., because of changes in rainfall or warmer or cooler temperatures), or indirectly, by changing markets, food prices, and the supply chain infrastructure—although the relative importance of climate change for food security and safety is expected to differ among regions (Gregory et al., 2005).

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Marilao-Meycauayan River System

**DEAD PHILIPPINE RIVERS**

Of 421 major rivers and 20 major large river basins, 50 are dead. (Aienza DENR 2008)

### DEAD RIVERS

- Metro Manila (5): the Marikina River, the San Juan River, the Navotas-Malabon-Tenejeros-Tullahan (NMTT) River, Parañaque River and the Pasig River
- The DENR also classified 10 rivers outside of the metropolis as biologically dead. These are the Bocaue and Meycauayan rivers in Central Luzon; the Imus, Ylang-Ylang and Mogpog rivers in Southern Tagalog; the Malaguit and Paniqui rivers in the Bicol region; the Balili River in the Cordillera Administrative Region (CAR); and two rivers in Central Visayas namely the Butuanon and Guadalupe rivers

### DEAD RIVERS

- Gozun said the biochemical oxygen demand (BOD) for Class C water should not exceed seven milligrams per liter. BOD refers to the amount of oxygen that is consumed by micro-organisms present in wastewater when discharged into a body of water.
- In addition, the dissolved oxygen (DO) present in Class C water should not be lower than five milligrams per liter to sustain aquatic life. According to the DENR, San Juan River has the highest BOD loading at 68 mg/l to a low of 54.8 mg/l against the DENR's standard of 7 mg/l. Its average DO level was at 2.4 mg/l.

### DEAD RIVERS

- The Average DO level (ADL) of the Marikina River was pegged at 3.1 mg/l and its average BOD loading (ABL) was at 18.2 mg/l. The NMTT's ADL was at 3.6 mg/l and its ABL was at 22.3 mg/l; Parañaque River registered a 2.5 mg/l ADL and a 42 mg/l ABL; and the Pasig River posted a 3.1 mg/l ADL and a 10.7 mg/l.



## The Regulatory Climate for Mining in the Philippines \*

Philippine laws on natural resources are based on the Regalian Doctrine. Under this principle, the Constitution states: "All lands of the public domain, waters, minerals, coal, petroleum, and other mineral oils, all forces of potential energy, fisheries, forests or timber, wildlife, flora and fauna, and other natural resources are owned by the State." It follows that the exploration, development and utilization of mineral resources fall under the supervision and control of the State.

The Constitution grants the State the option to directly undertake mining activities or to enter into the different modes of mining agreements with Filipinos or 60% Filipino-owned corporations. This provision is interpreted as giving preference to Filipinos in the grant of mineral rights, privileges and concessions. For large-scale mining, the Constitution grants the government the option to enter into an agreement for either financial or for technical assistance from a foreign corporation.

### The Mining Act of 1995

Under the Mining Act, all public and private lands are open to mining operations. It states: "all mineral resources in public or private lands, including timber or forestlands... shall be open to mineral agreements or financial or technical assistance agreement applications."

This provision has led to critics' contention that the law has virtually opened up the entire country to mining operations. The law declares areas covered by existing mining claims or that are deemed ecologically crucial as closed to mining operations. The latter includes old growth forests, watershed forest reserves, mangrove and mossy forests, national parks, bird sanctuaries and marine reserves.



Saturday, February 2, 2008

## Marinduque Mining Project: The Worst Mining Disaster in the Philippines



### Background

In 1969, Marcopper Mining Corporation (MMC) began the mining copper operation in Marinduque, Philippines. With a US\$40-million loan from the Asian Development Bank (ADB), Placer Dome, Inc. managed and controlled MMC, promising 30,000 tons of run-of-mine output per day. Placer Dome, which is 40 percent owner of MMC, secured and guaranteed the loans from the ADB.

However, Marinduqueños experienced a series of environmental mining-related disasters in the last 30 years. From 1975 to 1991, Calancan Bay became the dumpsite for millions of tons of

mine tailings by Placer Dome's operation. MMC-built Morog river dam burst in 1993.



## Mining in Negros: A Story of Plunder, Destruction and Dislocations

As in the rest of the country, mining has stripped bare Negros island's forest lands and scraped the bottom of the earth in search of precious minerals. Along with logging, it has been responsible for what Negros is today – an island threatened by constant flashfloods and other calamities that have killed thousands of people and inundated countless rural villages.

BY KARL G. OMBION and EDGAR A. CADAGAT  
Bulatlat.com/Cobra-Ans



## Misery Mountain

In Diwalwal, Davao del Norte, gold is more precious than human lives.

by **Sheila S. Coronel**

**THE MAIN** street of Diwalwal, on the foggy slopes of Mt. Diwata in Davao del Norte, is a gushing stream of mine waste, discarded plastic and assorted filth. It stinks of piss and human




**OUT OF THE DEPTHS** Teen-age miner



**Manila Bay is identified as a pollution hotspot**

The Manila Bay is the country's major hub and international gateway to its political, economic and social center. It is to the Filipino people, a natural heritage and a silent witness to the millennia of Philippine history and the venue of many historical events that helped shaped the Filipino culture and values. The Bay, with its semi-enclosed estuary facing the South China Sea, represents a vital national asset, providing a source of food, livelihood, employment, recreation, to an estimated 23 million Filipinos and a major source of economic benefit for the country. Along with its surrounding provinces, the Bay contributes an estimated 55% of the country's GDP and account for almost one third of the country's agriculture, fisheries and forestry production and 64 percent of the contribution of industrial and services sector to the GDP, respectively. It supports fisheries and aquaculture as among the major sources of livelihood as well as activities in the following development areas: a) manufacturing industry; b) shipping and ports; c) agriculture;



RP lawyer uses law to protect Mother Nature - 9/03/09 Page 1 of 3

**INQUIRER.net**

**Inquirer Headlines / Nation**  
<http://newsinfo.inquirer.net/inquirerheadlines/nation/view/20090903-223298/RP-lawyer-uses-law-to-protect-Mother-Nature>

**RM AWARDEE ANTONIO OPOSA JR. : RP lawyer uses law to protect Mother Nature**

By Ma. Ceres P. Doyo  
 Columnist / Writer  
 Philippine Daily Inquirer  
 Posted date: September 03, 2009

MANILA, Philippines—If humans in near-death situations need CPR (cardiopulmonary resuscitation), ailing Mother Nature also needs CPR (conservation, protection and restoration/rehabilitation).

That's according to environmental lawyer Antonio Oposa Jr., who uses medical jargon to call attention to the alarming state of the Philippine environment. But more importantly, he uses the law to protect LAW (land, air and water).

The play on words and meanings is vintage Oposa, one of this year's six recipients of the Ramon Magsaysay Award who were honored on Aug. 31 by the Ramon Magsaysay Award Foundation for their various contributions to society and for embodying that special RM factor—"greatness of spirit."

The foundation hailed Oposa, 54, "for his pathbreaking and passionate crusade to engage Filipinos in acts of enlightened citizenship that maximize the power of law to protect and nurture the environment for themselves, their children and generations still to come."

When this year's awardees were announced, Oposa's name was in the headlines—the result of a landmark case he filed more than 10 years ago with the Supreme Court on behalf of the polluted Manila Bay and future generations.

In December 2008, the high court upheld Oposa's case and compelled the named government agencies and local governments to regularly report to the court their efforts and their results.

Also, six months later, almost all the respondents failed to show proof of their efforts. The Supreme Court was not pleased.

**Associations between Cognitive Function, Blood Lead Concentration, and Nutrition among Children in the Central Philippines**

ORVILLE SOLOM, Ph.D, TRAVIS J. RODELL, MD, MPH, STELLA A. QUMBO, Ph.D, ELIZABETH BUTTRICK, MS, MPH, GLEN P. AYLWARD, Ph.D, MARIE LOU BACATE, MA, AND JOHN W. PEABODY, MD, Ph.D

**Objective** Because little is known about its effects on cognitive function among children in less-developed countries, we determined the impact of lead exposure from other nutritional determinants of cognitive ability.

**Study design** Data were from a cross-sectional population-based stratified random sample of 877 children (age 6 months-5 years) participating in the Quality Improvement Demonstration Study we are conducting in the Philippines. With data from validated psychometric instruments, venous blood samples, and comprehensive survey instruments, we developed multi-stage models to account for endogenous determinants of blood lead levels (BLLs) and exogenous confounders of the association between BLLs and cognitive function.

**Results** A 1 µg/dL increase in BLL was associated with a 3.32 point decline in cognitive functioning in children aged 6 months to 3 years and a 2.47 point decline in children aged 3 to 5 years olds. BLL was inversely associated with hemoglobin and folate levels. Higher folate levels mitigated the negative association between BLL and cognitive function.

**Conclusions** These population-based data suggest greater lead toxicity on cognitive function than previously reported. Our findings also suggest that folate and iron deficient children are more susceptible to the negative cognitive effects of lead. Folate supplementation may offer some protective effects against lead exposure. (*J Pediatr* 2008;152:237-43)

...roughly one-third of our randomly sampled children had elevated blood lead levels. using levels defined by the US Center for Disease Control, the maximum allowable cut off is 10ug/ml. we also found that variations across regions and provinces were wide.

PROVINCE	Number of Children	% of Children <10 (Normal)
Capiz	143	61.54
Iloilo	142	76.06
Negros Occidental	150	82
Bohol	134	59.7
Cebu	151	68.21
Negros Oriental	140	58.57
Siquijor	47	85.11
Camiguin	49	75.51
Biliran	49	53.06
Leyte	264	57.2
Eastern Samar	151	65
ALL	1,389	65.95

Biliran and Leyte province in region 8 had the highest incidence of elevated blood levels (over 40 percent) while Siquijor and Negros Occidental had the lowest (less than 20 percent).

**Philippines International Review**

December 2004

**This Issue**

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**A Disaster Waiting to Happen**

Pandacan is a residential neighbourhood of the city of Manila in the Philippines where Shell owns a massive oil and gas depot. Shell refuses to relocate its depot. Shell refuses to relocate its depot, despite legislation requiring them to do so. Over the past year, Pandacan has been the site of an ongoing battle between residents and Shell (and two other oil companies, Caltex and Petron) regarding the companies' refusal to remove the oil and gas depots located on 33-hectares of land.

**Philippines' activist exposes truth about Shell's oil depot at 2003 Shell AGM**

Hope Esquillo Tura, a member of the United Front to Oust the Oil Depots (UFO-OD), travelled to the 2003 Shell AGM in London where she presented community concerns for the continued presence of Shell's oil depot was circumventing a city ordinance that requires its removal. She explained that Shell had used its significant influence to secure a special permit to operate, rather than respect and comply with the local ordinance. At the AGM, Sir Philip Watts announced that Shell would protect the local community by creating a "buffer zone" between the oil depots and nearby residents. However Hope exposed the misleading nature of this announcement, pointing out that the so-called "buffer zone" was only going to be a few meters wide.

**Magsasaka at Siyentipiko Para sa Pag-unlad ng Agrikultura**  
 (Farmer-Scientist Partnership for Development, Inc.)

A farmer-led network of people's organizations, non-government organizations and scientists working towards the sustainable use and management of biodiversity through farmers' control of genetic and biological resources, agricultural production and associated knowledge.

**Asian Peoples Tribunal Against IRR1**

**IRRI, Guilty!**

Last April 4, members of several representative organizations and other interested parties came together for a tribunal hearing at the University of the Philippines Diliman. The International Rice Research Institute (IRRI) was being indicted with committing crimes against the peasants of Asia including violating the rights of employees, land grabbing, and chemical poisoning.

The most significant issue for the tribunal is the immunity afforded to IRRI by Presidential Decree (PD) 1620, while PD 547 and PD 1046-A gave IRR1 the authority to acquire land.

The nature of these decrees has meant that IRR1 is unable to be prosecuted or held legally accountable for action it has taken in the past or that it may take in the future.

The tribunal featured several distinguished participants, including Dr. Irene Fernandez (Asian Peasant



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### Defending against Intimidation Lawsuits

The Cases of Dr. Romeo Quijano and Carlos Barasona Bray


**THE PROBLEM**

Environmental defenders may find themselves named as defendants in defamation lawsuits in local courts. All too often, the goal of those who bring these lawsuits is to silence environmental defenders who publicly criticize projects or practices that harm both the environment and affected communities. This disfavored type of lawsuit is known in the U.S. as a "SLAPP suit" (Strategic Lawsuit Against Public Participation).

Dr. Romeo Quijano and Carlos Barasona Bray live on opposite ends of the earth. Both are highly educated professionals. They are also environmental defenders who have been forced to defend against such claims.

**DR. ROMEO QUIJANO**

Romeo Quijano is a physician and professor of pharmacology and toxicology in the Philippines. He had heard that the people of



As this case demonstrates, the methods of chilling

MindaNews - COMMENTARY: The Lies of PBGEA and Croplife, By Romeo F. Quijano, M.D.

**Minda News**  
This is OUR Mindanso!

Monday, 04 October 2010

**COMMENTARY: The Lies of PBGEA and Croplife, By ROMEO F. QUIJANO, M.D.**

by Romeo F. Quijano, M.D.  
Sunday, 22 November 2009 13:44

(Statement of toxicologist, Dr. Romy Quijano of UP-Manila: "The Lies of PBGEA and Croplife" prepared for the House Committee on Ecology Public Hearing on the aerial spraying issue, Friday, November 20 at the Apo View Hotel, Davao City. MindaNews welcomes the reactions of PBGEA and Croplife).

**Lie No. 1.** "At least two persons whom Quijano claimed to have died of pesticide spraying — the Dulla twins — are very much alive."

Truth: There was no mention at all in our report of "twins ...having died at birth". What we did write in our report was the following:

**When Rebecca Dulla, 26, bore her child, it was lifeless, its body and eyes yellow in color. "I didn't expect that the pesticides I inhaled would affect my pregnancy," she said.**

I was quoting directly from Rebecca Dulla, who I personally interviewed and examined at the time of my investigation in the community. The data I gathered at that time were spontaneously provided by the residents I talked to and examined.


**Lie no. 2.** "At left is "Murillo" who was brought by the ban

## Stockholm Convention on Persistent Organic Pollutants

**Stockholm Convention on Persistent Organic Pollutants** is an international environmental treaty that aims to eliminate or restrict the production and use of persistent organic pollutants (POPs).

**History** [edit]

In 1995, the Governing Council of the **United Nations Environment Programme (UNEP)** called for global action to be taken on POPs, which it defined as "chemical substances that persist in the environment, bio-accumulate through the food web, and pose a risk of causing adverse effects to human health and the environment".



The logo of the Stockholm Convention Secretariat

<b>Type of treaty</b>	United Nations treaty
<b>Signed</b>	23 May 2001
<b>Location</b>	Stockholm, Sweden
<b>Effective</b>	17 May 2004
<b>Condition</b>	Ninety days after the ratification by at least 50 signatory states

## Stockholm Convention on Persistent Organic Pollutants

**GREENPEACE** Southeast Asia

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**POPs**

In May 2001, more than 120 nations signed a historic accord, which aims to eliminate some of the world's most dangerous chemicals. The Stockholm Convention on Persistent Organic Pollutants (POPs) is the culmination of efforts to ban the production and use of an initial list of twelve substances, which include pesticides such as aldrin, endrin, toxaphene, chlordane, dieldrin, heptachlor, mirex, and DDT. The ban also covers industrial chemicals like polychlorinated biphenyls (PCBs) and

action against toxic

Enlarge Image

US Toxic Legacies: POPs Hotspots in Clark and Subic <http://archive.greenpeace.org/toxics/toxfreesia/documents/clarksubic.html> accessed 4 Oct 2010

### TOXIC ALERT

**US Toxic Legacies: Toxic Hotspots in Clark and Subic**

<Back

After almost a century of military presence in its former colony, the Philippines, the United States was forced to withdraw from its bases, including Clark Air Base and Subic Naval Base, in the Philippines after the Philippine Senate rejected an extension of the RP-US bases treaty in 1991. When the Americans left Clark and Subic, it soon became apparent that they also left behind a lethal legacy of toxic wastes brought about by irresponsible use, storage and disposal of hazardous materials including persistent organic pollutants such as Polychlorinated Biphenyls (PCBs) and organochlorine pesticides.

**Toxic Contamination at Clark & Subic**

A January 1992 report by the US General Accounting Office (GAO) revealed that the US military had failed to comply with its own environmental standards in its bases in the Philippines. As a consequence, cleaning-up the damage left behind in both bases could reach Superfund proportions. Subsequent studies include evidence suggesting severe environmental contamination, and potential for associated health risks for communities, in both bases.

More recently, the Philippine government which has undertaken extensive efforts to convert the former bases into flagship economic centers, commissioned environmental baseline studies in Clark and Subic to assess the actual extent of contamination. The Clark study, conducted by Weston International, found, among other things, that:

- high levels of the persistent toxic pesticide dieldrin in four operational wells and six back-up wells inside Clark, fueling fears that the underground aquifers that supply drinking water in and around the base are contaminated. The wells are all located near or down-gradient of the golf course. The dieldrin found in the wells may be the byproduct of dieldrin, a pesticide which may have been used in the golf course.

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**Incineration**

Humans continue to generate more waste. To change this alarming trend, strong political and industrial measures are urgently needed. Despite what industry and governments would like people to believe, incineration is not a solution to the world's waste problems, but part of the problem.

Incinerators may reduce the volume of solid waste, but they do not dispose of the toxic substances contained in the waste. They create the largest source of dioxins, which is one of the most toxic chemicals known to science.

Incinerators emit a wide range of pollutants in their stack gases. ashes



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**Hi-Tech: Highly toxic**

The world is consuming more and more electronic products every year. This has caused a dangerous explosion in electronic scrap (e-waste) containing toxic chemicals and heavy metals that cannot be disposed of or recycled safely. But this problem can be avoided. We are pressing leading electronic companies to change to turn back the toxic tide of e-waste.

Every year, hundreds of thousands of old computers and mobile phones are dumped in landfills or burned in smelters. Thousands more are exported, often illegally, from the Europe, US, Japan and other industrialised countries, to Asia. There, workers at scrap yards, some of whom

A Chinese child sits amongst a pile of wires and e-waste. Children can often be found dismantling e-waste containing many hazardous chemicals known to be potentially very damaging to children's health.

- Stop Climate Change
- Say no to genetic engineering
- Eliminate toxic chemicals
- Incineration
- Toxic Trade
- POPs
- Hi-Tech: Highly toxic
- The e-waste problem
- What's in electronic devices?
- Where does e-waste end up?
- Protect ancient

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**Toxic Trade**

The United Nations Environment Program (UNEP) estimates that 90 per cent of the world's hazardous waste is generated by the rich economies of the Organization for Economic Cooperation and Development (OECD). As a way of avoiding stringent and expensive environmental and safety regulations at home, most OECD countries have exported their waste problems to poorer, developing countries where regulations are lax or non-existent and workers are exploited.

In 1992, the UK exported more than 80,000 tonnes of toxic waste to developing nations and Eastern Europe. In the early 1990's, the United States, Germany, the Netherlands, and Japan have sent shipments of hazardous wastes to Asian countries mostly in the guise of recyclable materials. In 1996, Australia exported more than 8500 tonnes of toxic waste, including old car batteries, zinc and copper ashes to the Philippines and India.

Greenpeace inflatable intercepting the Russian container ship GAMZAT TSADASA carrying Australian hazardous computer waste, Manila, Philippines. Following this action, Filipino customs officials agreed to impound the two containers.

**Enlarge Image**

Australia exported more than 8500 tonnes of toxic waste, including old car batteries, zinc and copper ashes to the Philippines and India.

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**Japan "Twisting Arms" of Asian Neighbors to Take Toxic Waste**

**New Evidence Proves Japan's Intent to Export Toxic Waste to Asian Countries**

February 16

**BANGKOK, Environment** government reversing its strategy through de-agreement waste traf

The most r hazardous uncovered August 200

**Environment Experts Shoot Down JPEPA at Senate Inquiry**

Trade Pact Weakens Philippine Protection against Japan's Toxic Shipments

September 28, 2007

**MANILA, PHILIPPINES** - Environment experts continued to expose the unacceptable toxic waste trade provisions under the Japan Philippines Economic Partnership Agreement (JPEPA) as the Senate took a closer scrutiny at the treaty's health and environmental repercussions.

Over 200 protesters gathered outside the

The groups, which include Basel Actio Network, EcoWaste Coalition

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**EPA** United States Environmental Protection Agency

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**Drinking Water Contaminants**

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**Drinking Water Contaminants**

**National Primary Drinking Water Regulations**

National Primary Drinking Water Regulations (NPDWRs or primary standards) are legally enforceable standards that apply to public water systems. Primary standards protect public health by limiting the levels of contaminants in drinking water. Visit the list of regulated contaminants with links for more details.

- List of Contaminants & their Maximum Contaminant Level (MCLs)
- Regulation Development
- EPA's Regulated Contaminant Timeline (PDF) (1 pp, 85 K ) (About PDF)
- National Primary Drinking Water Regulations - The complete regulations regarding these contaminants available from the Code of Federal Regulations Website

**Typhoon Ondoy (Ketsana)**

From September 26 to 28, 2009, Typhoon Ondoy (international code name Ketsana) hit Luzon's eastern and central provinces, drowning Metro Manila and the provinces of Bulacan and Laguna in floods from two to ten feet deep.

In less than 12 hours, Ondoy brought as much as 455 millimeters of rainfall in Metro Manila, the highest amount of rainfall recorded in the capital in 42 years, or the equivalent of one month's worth of rainfall in Manila during the month of August.

**Report on Philippines Climate Change Impact on Water Greenpeace 2010**

Municipality of Rizal and Laguna, and were submerged in over ten feet of water. Scientists estimate it will take over six months for the waters to subside along the shores of the Lake.<sup>29</sup>

The speed with which the waters rose caught local governments, national disaster agencies,



A delivery truck turned upside down, after typhoon Ondoy caused heavy flooding in Barangay Sto. Nino in Marikina. Located in a valley, Marikina City was one of the hardest hit by the said typhoon. Greenpeace is calling on industrialized nations to put up an adaptation and mitigation fund for countries like the Philippines that are most vulnerable and least prepared to deal with the impacts of climate change. © Greenpeace/Ogie Cruz-Sy

**TABLE 1 – WATER RESOURCES AND USE IN TROPICAL ASIA**

Country	Annual Internal Renewable (km <sup>3</sup> )	Annual Withdrawal (km <sup>3</sup> )	% of Water Resources	Sectoral Withdrawal (%)		
				Domestic	Industry	Agriculture
Bangladesh	2,357.0	22.50	1	3	1	96
Bhutan	95.5	0.02	0	36	10	54
Cambodia	496.1	0.52	0	5	1	94
India	2,085.0	380.00	18	3	4	93
Indonesia	2,530.0	16.59	1	13	11	76
Laos	270.0	0.99	0	8	10	82
Malaysia	456.0	9.42	2	23	30	47
Myanmar	1,082.0	3.96	0	7	3	90
Nepal	170.0	2.68	2	4	1	96
Philippines	323.0*	29.50	9	18	21	61
Singapore	0.6	0.19	32	45	51	4
Sri Lanka	43.2	6.30	15	2	2	96
Thailand	179.0	31.90	18	4	6	90
Viet Nam	376.0	28.90	8	13	9	78

Source: WRI, 1996-Data Table 13.1. \* = 479 km<sup>3</sup> (AQUASTAT, 2007.)



**TABLE 2 – SUMMARY OF OBSERVED IMPACTS OF CLIMATE CHANGE ON THE WATER RESOURCES SECTOR IN SOUTHEAST ASIA**  
(ADB, Economics of Climate Change, April 2009)

Increasing temperature	– Increased evapo-transpiration in rivers, dams, and other water reservoirs leading to decreased water availability for human consumption, agricultural irrigation, and hydropower generation
Variability in precipitation (including El Niño Southern Oscillation)	– Decreased river flows and water level in many dams and water reservoirs, particularly during El Niño years, leading to decreased water availability; increased populations under water stress – Increased stream flow particularly during La Niña years leading to increased water availability in some parts of the region – Increased runoff, soil erosion, and flooding, which affected the quality of surface water and groundwater
Sea level rise	– Advancing saltwater intrusion into aquifer and groundwater resources leading to decreased freshwater availability

Sources: Boer and Dewi (2008), Cuong (2008), Ho (2008), Jesdapipat (2008), Perez (2008).

**TABLE 3 – TOTAL RENEWABLE WATER RESOURCE PER CAPITA/DAY**

Year	Population	Total water resource	Per capita withdrawal
1975	42,070,660	31,191 liters/person/day	
1990	60,703,206	21,616 liters/person/day	
1995	68,616,536	19,125 liters/person/day	1,106 l/p/d
2000	76,506,928	17,154 liters/person/day	1,020 l/p/d
2005	85,261,000	15,800 liters/person/day	1,102 l/p/d
2007	88,574,614	14,816 liters/person/day	

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# MailOnline Science

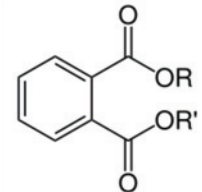
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## A planet poisoned by plastic: From Hawaiian beaches to the coast of Britain, we're paying a lethal price for our throwaway society, says TV adventurer

By SIMON REEVE  
Last updated at 8:02 AM on 17th May 2010

## PHTHALATES



- Esters of phthalic acid and are mainly used as plasticizers (substances added to plastics to increase their flexibility, transparency, durability, and longevity).
- Personal-care items containing phthalates include perfume, eye shadow, moisturizer, nail polish, liquid soap, and hair spray.

Environmental Health Perspectives • VOLUME 108 | NUMBER 9 | September 2000

### Article

#### Identification of Phthalate Esters in the Serum of Young Puerto Rican Girls with Premature Breast Development

Ivelisse Colón,<sup>1</sup> Doris Caro,<sup>1</sup> Carlos J. Bourdony,<sup>2,3</sup> and Osvaldo Rosario<sup>1</sup>

<sup>1</sup>Department of Chemistry, University of Puerto Rico, San Juan, Puerto Rico; <sup>2</sup>Pediatric Endocrinology and Diabetes Division, San Juan City Hospital, San Juan, Puerto Rico; <sup>3</sup>Department of Pediatrics, University of Puerto Rico, School of Medicine, San Juan, Puerto Rico

Premature breast development (thelarche) is the growth of mammary tissue in girls younger than 8 years of age without other manifestations of puberty. Puerto Rico has the highest known incidence of premature thelarche ever reported. In the last two decades since this serious public health anomaly has been observed, no explanation for this phenomenon has been found. Some organic pollutants, including pesticides and some plasticizers, can disrupt normal sexual development in wildlife, and many of these have been widely used in Puerto Rico. This investigation was designed to identify pollutants in the serum of Puerto Rican girls with premature thelarche. A method for blood serum analysis was optimized and validated using pesticides and phthalate esters as model compounds of endocrine-disrupting chemicals. Recovery was > 80% for all compounds. We performed final detection by gas chromatography/mass spectrometry. We analyzed 41 serum samples from thelarche patients and 35 control samples. No pesticides or their metabolite residues were detected in the serum of the study or control subjects. Significantly high levels of phthalates [dimethyl, diethyl, dibutyl, and di-(2-ethylhexyl)] and its major metabolite mono-(2-ethylhexyl) phthalate were identified in 28 (68%) samples from thelarche patients. Of the control samples analyzed, only one showed significant levels of di-isooctyl phthalate. The phthalates that we identified have been classified as endocrine disruptors. This study suggests a possible association between plasticizers with known estrogenic and antiandrogenic activity and the cause of premature breast development in a human female population. *Key words:* endocrine-disrupting chemicals, phthalate esters, premature thelarche. *Environ Health Perspect* 108:895–900 (2000). [Online 8 August 2000] <http://ehpnet1.niehs.nih.gov/docs/2000/108-895-900/colabstr.html>

#### Altered Semen Quality in Relation to Urinary Concentrations of Phthalate Monoester and Oxidative Metabolites

Hauser, Russ; Meeker, John D.; Duty, Susan; Silva, Manori J.; Calafat, Antonia M.

**Epidemiology:** November 2006 - Volume 17 - Issue 6 - pp 682-691  
doi: 10.1097/01.ede.0000235996.89953.d7  
Original Article

**Abstract**

Background: Phthalates are multifunctional chemicals used in a variety of consumer, medical, and personal care products. Previously, we reported dose-response associations of decreased semen quality with urinary concentrations of monobutyl phthalate (MBP) and monobenzyl (MBzP) phthalate, which are metabolites of dibutyl phthalate and butylbenzyl phthalate, respectively. The present study extends our work in a larger sample of men and includes measurements of di(2-ethylhexyl) phthalate (DEHP) oxidative metabolites.

Conclusion: The present study confirms previous results on the relationship of altered semen quality with exposure to MBP at general population levels. We did not find associations between semen parameters and 3 DEHP metabolites.

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### Stockholm Convention on Persistent Organic Pollutants

**Stockholm Convention on Persistent Organic Pollutants** is an international environmental treaty that aims to eliminate or restrict the production and use of persistent organic pollutants (POPs).

**History** [edit]

In 1995, the Governing Council of the **United Nations Environment Programme (UNEP)** called for global action to be taken on POPs, which it defined as "chemical substances that persist in the environment, bio-accumulate through the food web, and pose a risk of causing adverse effects to human health and the environment".

Aldrin  
Chlordane  
Dieldrin  
Endrin  
Heptachlor  
Hexachlorobenzene  
Mirex  
Toxaphene  
Polychlorinated biphenyls (PCBs)  
DDT  
Polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans  
α-hexachlorocyclohexane  
B-Hexachlorocyclohexane  
Chlordecone  
Hexabromobiphenyl  
Hexabromodiphenyl ether  
Lindane  
Pentachlorobenzene

**Nanomedicine**

The prefix "nano" indicates the scale on which the latest scientific developments are taking place: one billionth of a meter. From nanotechnology, advances have appeared in what is called nanomedicine. The main objective of this concept of nanotechnology is to obtain cures for diseases from inside the body and at a cellular or molecular level. Devices smaller than the diameter of a human hair have been developed.

**Nano-scaffolds for Regenerating Organs**

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3. **FUNCTIONALIZATION**  
4. **CELL ATTACHMENT**  
5. **CELL DIFFERENTIATION**

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4. **NEURONAL CONNECTION**

**Nanoscopic Beams**

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2. **NEURONAL DIFFERENTIATION**  
3. **NEURONAL SURVIVAL**  
4. **NEURONAL CONNECTION**

**ATOTVI**  
http://atovianimalg2.com/

**ABOUT ATOVI**

ATOTVI is a nano-invented product based on bio-molecular alteration, nuclear reaction and nanotechnology. It is a super green powder made from vitamins and minerals. It is naturally different from conventional feed products in the market. It has no medication and nutritional value due to molecular alteration making the final product with one long molecule chain with no negative effects on the physiology and immune system of animals.

**ORGANIC AQUA FEEDS**

Our organic aqua feeds deliver three (3) unique and distinct actions. The first action occurs when the feeds are ingested. And the second occurs when the feeds are excreted in the form of urine, feces, and sloughs. The third is when the feeds are excreted in the form of urine, feces, and sloughs. The third is when the feeds are excreted in the form of urine, feces, and sloughs.

### NANOTECHNOLOGY : HOW SAFE/DANGEROUS?

- Present in consumer products:
  - In Cosmetics – creams & sunscreens
  - Appliances
  - Clothes
  - Supplements
- Unlabeled
- Unregulated
- Lack of adequate assessment tools

<http://www.nanotechproject.org/inventories/consumer/>

### NANOTOXICITY

- Exceptionally large relative surface area creates increased surface reactivity and enhanced intrinsic toxicity [See, e.g., Andre Nel et al., Toxic Potential of Materials at the Nanolevel, Science 311, 622–623 (2006)]
- Many types of nanoparticles have proven to be toxic to human tissue and cell cultures, resulting in oxidative stress, inflammatory cytokine production, DNA mutation, and even cell death [See, e.g., Friends of the Earth, Nanomaterials, Sunscreens and Cosmetics: Small Ingredients, Big Risks (May 2006); R. Dunford et al., "Chemical Oxidation and DNA Damage Catalysed by Inorganic Sunscreen Ingredients," FEBS Letters, 418, 87–90 (1997)]

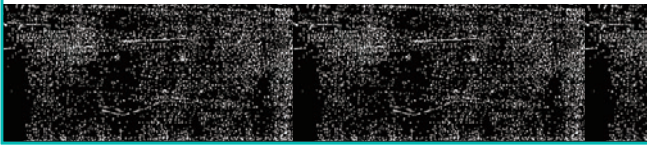
### CHANGES IN CONSUMER BEHAVIOR

- With an increasingly global food market, consumer expectations and behaviors with regard to food have changed dramatically over the past hundred years.
- Consumers have grown to expect a wide variety of foods, including exotic and out-of-season foods. As a result, the consumption of fresh fruits and vegetables has increased (IOM/NRC, 1998) and is expected to continue to do so: per capita fruit consumption is predicted to grow in the United States by 5–8 percent by 2020, with a smaller increase predicted for vegetables (Lin, 2004).
- Additionally, consumers are spending more money on food away from home, which accounted for 48.5 percent of total food dollars, or approximately \$565 billion, in 2008 (ERS, 2010).





## TAKE HOME MESSAGE



## PROTECT NATURE AND RESPECT THE GLOBAL FOOD CHAIN

