

Congressional Briefing
September 25, 2012

Human Health Effects of
Biomass Incinerators

Dioxins Damage
Children and Adults

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- I served two tours in Vietnam where US soldiers were exposed to Agent Orange contaminated with dioxins. Dioxins have damaged or killed tens of thousands of US Veterans since 1970. Dioxins exposure was unintentional just like “friendly fire.”
- In 2008 a biomass burning company wanted to come to my hometown.
- I heard from a fellow physician that the company would create dioxins as a byproduct.

- The company touted themselves as clean and green even though they burned poultry waste and wood.
- They denied any health risks.
- They claimed health, environmental, other data showing that their process was safe.
- They claimed complete compliance with all regulations and laws

- They claimed that they actually cleaned up the air.
- They claimed to be a solar process based on the logic that the Sun made the food that the chicken ate. Their science?
- We found out that their whole promotional package was laced with PR spin and deceit.

- We learned that they emitted millions of pounds of toxic air pollution.
- The majority of physicians, pharmacists, 92.5 % of Chamber of Commerce businesses, all five tourist agencies, the majority of county citizens polled and our Commissioners came to oppose the company.

- When physicians, citizens and leaders confronted this company about their toxic emissions and health risks the company quietly slipped out of town.
- We found that we were not alone in our opinion and concern that biomass burning emissions are unsafe for any community.

Multiple other medical professionals and organizations throughout the United States have expressed concern

Read this paper called
Second Opinion:

THE MEDICAL PROFESSION DIAGNOSES
BIOMASS INCINERATION©

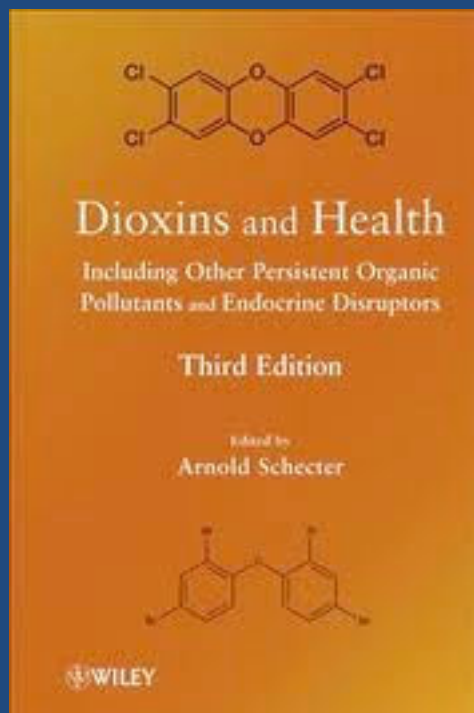
Among those concerned . . .

Because of
multiple lung
problems



Representing
94,700
Members

There's national and international concern about the toxic health effects of dioxins



“because”



Increasing levels of dioxins increase health risks in humans

- The Environmental Protection Agency began studying dioxins ~ 26 years ago.
- Research data proved the risks and the EPA produced a report.
- There was an effort by those who emit dioxins to suppress the government report but after thorough vetting . . .

- by the EPA Science Advisory Board.
- The EPA published the non-cancer dioxins report in February 2012.
- The release was prompted by an EPA study that found that after years of decrease since 1987 **dioxins emissions had increased 18 %** from 2009 to 2010. There has been a 56% increase in dioxins from wood burning from 1987 to 2010. So as we reduce one area of dioxins emissions we are increasing another . . . biomass burning.


EPA's Reanalysis of Key Issues Related to Dioxin Toxicity and Response to NAS Comments, Volume 1 (PDF) (2012)

Environmental Assessment

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» [EPA's Dioxin Reassessment \(External Review Draft\), Submitted to the Science Advisory Board \(SAB\) 2000](#)

EPA's Dioxin Reassessment (External Review Draft), Submitted to the Science Advisory Board (SAB) 2000

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Report Information

Dioxin Reassessment, SAB Review Draft
On September 15, 2000, the EPA transmitted to the Science Advisory Board (SAB) the [SAB Review Draft of EPA's Exposure and Human Health Reassessment of 2,3,7,8-Tetrachlorodibenzo-p-Dioxin \(TCDD\) and Related Compounds](#), in preparation of a SAB review in the Fall 2000. The SAB Dioxin Reassessment Review Subcommittee (DRRS) (of the SAB Executive Committee) subsequently met on November 1 and 2, 2000 to review some specific sections of the Dioxin Reassessment document. The [SAB response to the review and meetings to discuss the dioxin reassessment](#) are also available on the EPA web site.

Dioxin Information Sheets

EPA has prepared four information sheets to provide background information on the reassessment and other EPA dioxin-related activities. The information sheets are listed below with a short description of their purpose and contents, as well as the draft reassessment documents.

- 1. Dioxin: Summary of the Dioxin Reassessment Science**

The [Dioxin: Summary of the Dioxin Reassessment Science](#) (Information sheet 1) provides an abbreviated summary of the science in the draft dioxin reassessment. It is meant to provide a less technical discussion of the science than the scientific Highlights described under item (2) below, and is aimed at the general public.

- **Addresses the key non-cancer issues related to dioxins toxicity**
- **The comments define the risks**
- **27 years in the compiling**
- **334 pages of research**
- **1,500 scientific studies**

Michael DeVito, Ph.D., Senior Toxicologist

Toxicology Branch

National Toxicology Program

National Institute of Environmental Health
Sciences

A leading government scientist on the EPA
report

- There are a host of other scientific studies concerning dioxins.
- I've included 42 pages of additional references on line and I recommend the first article on the list . . .

“Dioxins: an overview”

**by, Arnold Schechter, Linda Birnbaum, John Ryan,
John D Constable**

**Birnbaum, Ph.D., is Director of the National
Institute of Environmental Health and Director
of the National Toxicology Laboratory**

- **This study makes it clear that . . . “Dioxins did not exist prior to industrialization except in very small amounts due to natural combustions and geological processes.”**

Two Sentinel Points

- It's the **hydrocarbon and chlorine burning process that creates dioxins** and not simply "industrialization."
- Burning biomass to make energy or deal with waste **creates a whole new additional source of dioxins and set of health problems.**

- An effective way to reduce this whole new source dioxins is to **reduce biomass burning** and create energy and deal with waste in alternate ways.
- Reduced biomass burning would have the added effect of **reducing multiple other** toxic smokestack **emissions** including particulate matter, nanoparticles, nitrogen oxide leading to ozone, etc.

What are dioxins?

Terminology

They're Persistent Organic Pollutants

“POPs” along side DDT

in the list of the “Deadly Dozen”

most toxic chemicals

known to man

They Persist

- They persist for decades in soil, water and animals after they're created.
- They are **highly resistant** to physical, chemical and biologic degradation.
- The primary way to reduce dioxins is to not create any more of them. That's the World Health Organization recommendation.

- When hydrocarbons like trees, railroad ties, tires, poultry litter, grass, trash, garbage, etc. are burned in the presence of chlorine dioxins are created.
- Almost all biomass contains chlorine.
- **Creation** is the operative word because dioxins do not exist in biomass before burning.

Dioxins – An Insidious Risk

- They're a necessary byproduct of biomass 'burning'
- Smokestack emissions are like secondhand cigarette smoke and nobody can leave the room



300 foot cigarettes

Dioxins Damage . . .

Almost impossible to avoid because:

- Invisible and odorless
- **No warning signs** of exposure or damage
- A single test costs ~ \$1,200
- **There's no medical treatment to remove dioxins** “even if you find them.”

How do dioxins get in humans?

- After **creation during the burning process** they exit the smokestack and settle on soil, in water & on leaves, etc.
- Trapped in fly or bottom ash they're spread as fertilizer, used as building materials or placed in landfills where they eventually **leach to the soil and water**. Minnesota Dept of Health in 2009 reported dioxins in waste derived fertilizer.

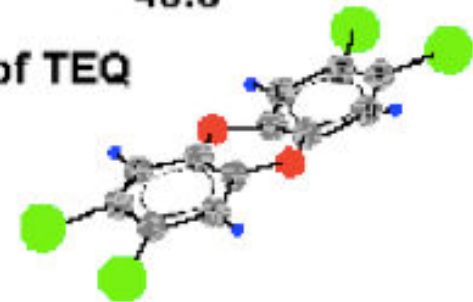
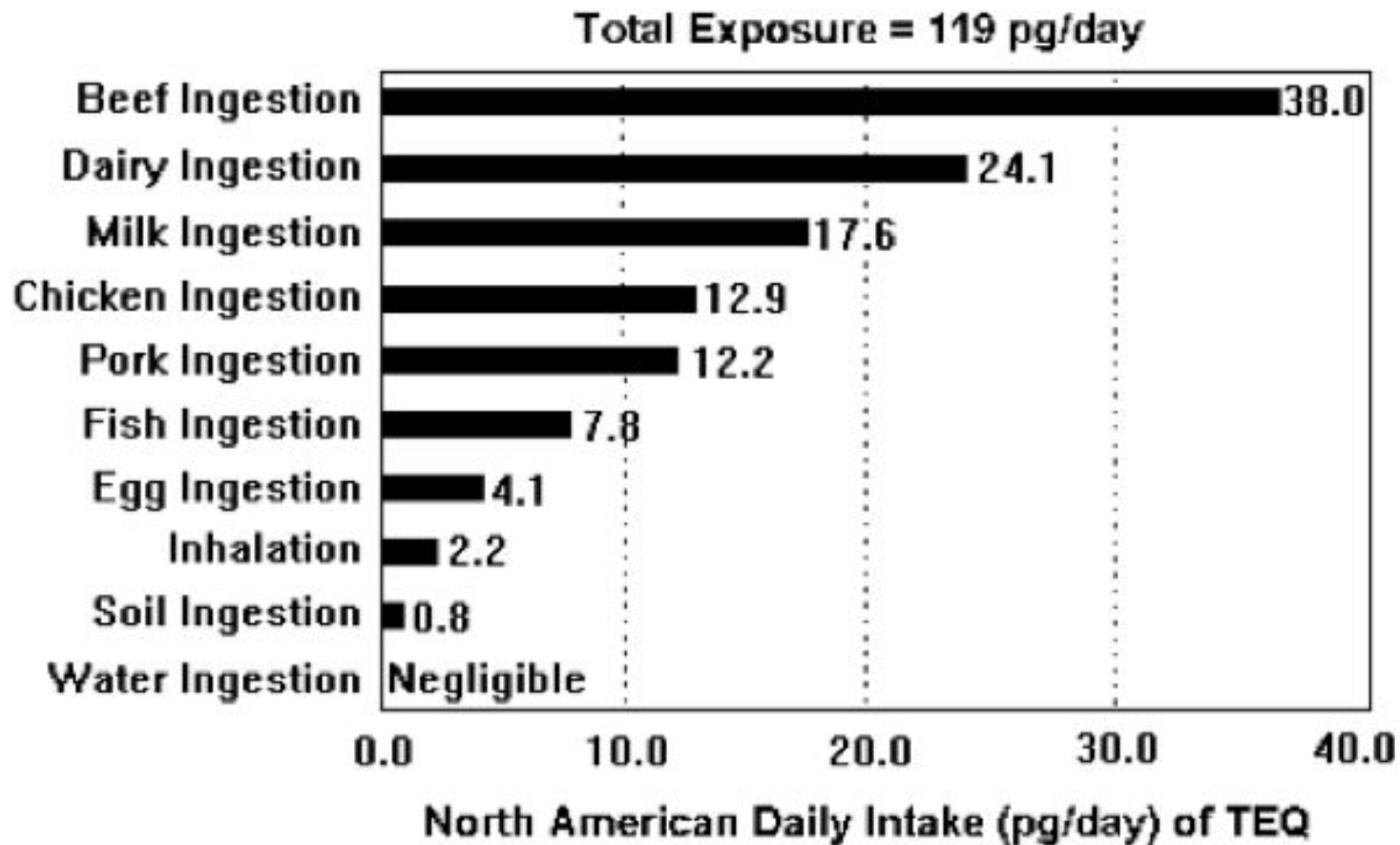
Dioxins **Bio-accumulate** in Fat

- Chickens and other birds peck contaminated soil.
- Cows and sheep graze on contaminated soil and plant matter.
- Fish ingest contaminated algae and plants.

Humans **Bio-accumulate** Dioxins by Ingesting

- Meat and milk from exposed grazing animals
- Meat from chickens and other exposed fowl
- Eggs from exposed chickens and other fowl
- Flesh from exposed fish

Exposure to Dioxins



The greater the exposure the higher the risk for damage

- Dioxins bio-accumulate in humans.
- Males, even kids from childhood, are never able to eliminate dioxins.
- Unfortunately, females can eliminate dioxins through the placenta to the fetus and through breast milk to the newborn at ~ 6 times the level of the pregnant and nursing mom.

The most toxic effect
of dioxins
is on the developing fetus,
newborn and child.

How does that happen?

➤ Dioxins Derange Development

- Genes determine the functions of our body and genes are regulated by epigenetics.
- **Dioxins imitate** the normal (epigenetic) messengers and **send false signals** to the genes turning them 'off' or 'on' abnormally.
- Dioxins cause profound biologic effects (abnormal development) in parts per trillion.

A few parts per trillion of dioxin exposure can be enough to cause abnormal development



A little bit of dioxins
can make a big difference
at the target.



What are some of the
target organs, abnormalities
and outcomes?

Abnormal Outcomes

- Premature delivery
- Reduced response to vaccinations
- Immune system suppression
- Increased respiratory and ear infections and allergy in children
- Alterations in fetal development
- Reduced head circumference in the fetus
- Reduced IQ

Other abnormalities associated with dioxins exposure:

- Hyper-reflexivity in newborns
- Increased need for neurologic support
- Endometriosis
- Polycystic Ovary Disease
- Protein disorders in muscle (amyloidosis)
- Heart disease, hypertension
- Hardening of the arteries (Atherosclerosis)

Other damaging disorders associated with dioxins exposure:

- Decrease sperm quality & quantity
- Reduced fertility
- Abnormal menses
- Type II Diabetes
- Altered thyroid hormone levels
- Auto-immune diseases
- Parkinsonism

Any Level of Dioxins Increases the Risk of Cancer

- Squamous cell carcinoma
- Leukemia
- Multiple myeloma
- Prostate cancer
- Respiratory cancer
- Hodgkin's and Non-Hodgkin's lymphoma
- Breast cancer

There are hidden but associated social and economic costs:

- Abnormal developmental effects can persist for a lifetime.
- The abnormalities **create a need** for more costly medical and social care.

Biomass electricity is expensive especially when health care costs from resulting diseases are taken into consideration.

THINK OF HOW MANY
HEALTHCARE-RELATED
JOBS WE'RE CREATING.



klossner

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- Studies prove that dioxins damage and kill humans.
- Even background levels increase health risk and the US average is above the EPA Reference dose now.
- Though there was a dramatic decrease in dioxins from 1987 to 2010 there was an 18% increase in dioxins emissions from 2009 to 2010 mostly from burning biomass.

- Does it make sense to pay people to burn more biomass and create more dioxins?
- Incentivizing biomass burning is like paying businesses to build and light 300 foot cigarettes in American communities and to force everyone, including children, to breathe the secondhand smoke.

Elsewhere:



United Nations Environment Program (UNEP) adopted a worldwide treaty to eliminate Persistent Organic Pollutants including dioxins.

➤ What can legislators do?

➤ Reduce dioxins!

➤ How?



Join the opposition
to creating dioxins by

by opposing incentives
for biomass burning

that emits dioxins as well as
particulate matter, emissions leading
to ozone, etc.

Thank You

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Human Health Effects of Biomass Incinerators

Dioxins Damage
Adults and Children

Slide show and references
are available at:

www.SaveAmericasForests.org

End