

ENDOCRINE DISRUPTERS / GENDER-BENDERS

Why Boys are Turning into Girls

Gender-bending chemicals are largely exempt from new EU regulations

Geoffrey Lean

23 October 2009



Girls will be girls and boys will be girls: everyday 'gender-bending' chemicals are feminising increasing numbers of babies Photo: Getty Creative

Here's something rather rotten from the State of Denmark. Its government yesterday unveiled official research showing that two-year-old children are at risk from a bewildering array of gender-bending chemicals

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in such everyday items as waterproof clothes, rubber boots, bed linen, food, nappies, sunscreen lotion and moisturising cream.

The 326-page report, published by the environment protection agency, is the latest piece in an increasingly alarming jigsaw. A picture is emerging of ubiquitous chemical contamination driving down sperm counts and feminising male children all over the developed world. And anti-pollution measures and regulations are falling far short of getting to grips with it.

Sperm counts are falling so fast that young men are less fertile than their fathers and produce only a third as much, proportionately, as hamsters. And gender-bending chemicals are increasingly being blamed for the mystery of the "lost boys": babies who should normally be male who have been born as girls instead.

The Danish government set out to find out how much contamination from gender-bending chemicals a two-year-old child was exposed to every day. It concluded that a child could be "at critical risk" from just a few exposures to high levels of the substances, such as from rubber clogs, and imperilled by the amount it absorbed from sources ranging from food to sunscreens.

The results build on earlier studies showing that British children have higher levels of gender-bending chemicals in their blood than their parents or grandparents. Indeed WWF (formerly the World Wildlife Fund), which commissioned the older research, warned that the chemicals were so widespread that "there is very little, if anything, individuals can do to prevent contamination of themselves and their families." Prominent among them are dioxins, PVC, flame retardants, phthalates (extensively used to soften plastics) and the now largely banned PCBs, one and a half million tons of which were used in countless products from paints to electrical equipment.

Young boys, like those in the Danish study, could end up producing less sperm and developing feminised behaviour. Research at Rotterdam's Erasmus University found that boys whose mothers were exposed to PCBs and dioxins were more likely to play with dolls and tea sets and dress up in female clothes.

And it is in the womb that babies are most vulnerable; a study of umbilical cords from British mothers found that every one contained hazardous chemicals. Scientists at the University of Rochester in New York discovered that boys born to women exposed to phthalates had smaller penises and other feminisation of the genitals.

The contamination may also offer a clue to a mysterious

shift in the sex of babies. Normally 106 boys are born for every 100 girls: it is thought to be nature's way of making up for the fact that men were more likely to be killed hunting or in conflict. But the proportion of females is rising, so much so that some 250,000 babies who statistically should have been boys have ended up as girls in Japan and the United States alone. In Britain, the discrepancy amounts to thousands of babies a year.

A Canadian Indian community living on ancestral lands at the eastern tip of Lake Huron, hemmed in by one of the biggest agglomerations of chemical factories on earth, gives birth to twice as many girls as boys. It's the same around Seveso in Italy, contaminated with dioxins from a notorious accident in the 1970s, and among Russian pesticide workers. And there's more evidence from places as far apart as Israel and Taiwan, Brazil and the Arctic.

Yet gender-benders are largely exempt from new EU regulations controlling hazardous chemicals. Britain, then under Tony Blair's premiership, was largely responsible for this – restricting their inclusion in the first draft of the legislation, and then causing even what was included to be watered down. Confidential documents show that it did so after pressure from George W Bush's administration, which protested that US exports "could be impacted".

Now the Danish government is planning to lobby to have the rules toughened up. It is particularly concerned by other studies which show that gender-bending chemicals acting together have far worse effects than the expected sum of their individual impacts. It wants this to be reflected in the regulations, citing its discovery of the many sources to which the two-year-olds are exposed – modern slings and arrows, as it were, of outrageous fortune.

<http://www.telegraph.co.uk/earth/earthcomment/geoffrey-lean/6418553/Why-boys-are-turning-into-girls.html>



Gender-Bending Chemicals put Baby Boys at Risk of Cancer and Infertility, Report Finds

Unborn baby boys are at greater risk of developing cancer and infertility later in life due to gender-bending chemicals found in food, cosmetics and cleaning products, a new report warns

13 May 2009

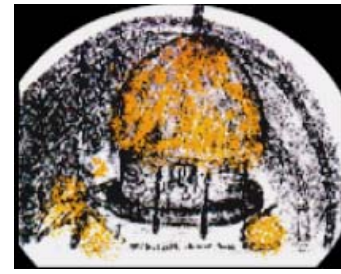
The chemicals are linked to increasing levels of birth defects, testicular cancer, and falling sperm counts among men, experts claim.

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AFRIKAN SPIRITUALITY

ETHOES, ETHICS AND TABOOS OF AFRICAN SPIRITUALITY (Myk)

By NAIWU OSAHON



The traditional shrine as a symbol of our cultural history

The principal reason why we are not able to forge a unified nation for ourselves, a unified race, is because we allow foreign religions and their divisive ideologies to tear us apart. They turn us into North vs. South, Christians vs. Muslims, as we fight their stupid, myopic wars for them, loosing self-confidence and respect for what is ours and native to us in the process. We loose sight of our oneness, our African essence, which makes us brothers and sisters and to correct this, all Africans must return now to our spirituality to confront our problems together as one unique people whose ancestors pioneered civilization and who are poised to take back the leadership of the world in every endeavour.

Our ancestors laid down the rules for all humans to live by, and the rules that govern the Myk. In Odu Ifa, we are told that humans are divinely chosen to bring good in the world, and that this is the fundamental mission and meaning of human life. Because we are the origin of the human race, this law applies more seriously to us than any of the other races we sired. Africans were specifically and peculiarly given the responsibility to care for the world from the dawn of human history, by being the first born.

The human race lost spiritual direction when we were forced, two thousand years ago, to drop our nurturing responsibility for the earth. Our new-age, greedy, self-centred 'extended family siblings' or cousins, turned the earth into a blazing hellhole of misery for all that live in it, humans, the echo system, everything. Idu Ifa implores us to take back our responsibility and do good for the world because doing good is the best expression of character. The Serudj ta concept, implores us to restore, repair, and renew the world, making it more beautiful and beneficial than we inherited it. Inherit in the sense of healing ourselves and each other as well as the world. Queen Hatshepsut added that we must supersede what was formerly done. "For I want it to be said by those who come afterwards, how beautiful is this which happened because of me."

Our ancestors insist that we think of eternity and plan for the future and for those who will come after us. We must leave them a legacy of good. Husia claims that the wise are known

for their wisdom but the great are known by their good deeds.

Odu Ifa says, let us be exalted by the good we do, the good, heaven and history have chosen us to do. And even as we are chosen, let us choose to be chosen, not over and against any other people, but chosen with all other people to create, increase, and sustain good in the world. And in this choosing, let us always choose life over death, justice over injustice, freedom over oppression, self-inflicted or imposed, peace over war, love over hatred and truth over lies in any form. In this then lies the moral meaning of our lives to choose to do good in the world and to do it not only for ourselves, but for the world.

According to Odu Ifa, we live in a world and web of interdependence. Anyone who does good does it for herself and anyone who does evil does it to himself. The greatest good comes from our gathering together in harmony whether in family, friendship, community, society or the world. Husia says, I did good for my community. I spoke truth, I did justice. For I knew the value of doing good. It will be a storehouse for those who come after us.

Husia says we are given wealth so that we can do good with it. Idu Ifa adds that surely everyone deserves and has a right to the good and goods of and in the world, and confirms that anyone who cultivates the disposition for doing good especially to the needy, this person in particular, will never lack happiness.

Harwa, the chief of staff of Amenirdis, the Divine wife of Amen, says in Husia that we are to be a refuge for the poor, a raft for the drowning, a ladder for those in the pit (of despair), a shade for the orphan, and a helper for the widow, that we should be one who speaks for the wretched, assists the unfortunate, and aids the oppressed by

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FEATURED ARTICLES

Pollution Triggers Bizarre Behaviour in Animals

By Andy Coghlan

NewScientist
September 1, 2004

Hyperactive fish, stupid frogs, fearless mice and seagulls that fall over. It sounds like a weird animal circus, but this is no freak show. Animals around the world are increasingly behaving in bizarre ways, and the cause is environmental pollution.

The chemicals to blame are known as endocrine disruptors, and range from heavy metals such as lead to polychlorinated biphenyls (PCBs) and additives such as bisphenol A.

For decades, biologists have known that these chemicals can alter the behavior of wild animals. And in recent years it has become clear that pollutants can cause gender-bending effects by altering animals' physiology, particularly their sexual organs.

But now two major reviews have revealed that the chemicals are having a much greater impact on animal behavior than anyone suspected. Low concentrations of these pollutants are changing both the social and mating behaviors of a raft of species. This potentially poses a far greater threat to survival than, for example, falling sperm counts caused by higher chemical concentrations.

Snails and Quails

The two research teams have independently collected evidence revealing the effects on egrets and gulls, snails, quails, rats and macaques, minnows, mosquito fish, falcons and frogs. Behaviors altered include mating and parenting, nest building, learning, predator avoidance, foraging, activity levels and even balance.

In one study, for instance, male starlings exposed to dicotophos insecticide decreased their singing, displaying, flying and foraging activities by 50%. And newts exposed to low levels of the pesticide endosulfan found it harder to sniff out the attractive pheromones of potential mates.

Researchers have also shown that increasing numbers of male western gulls hatched from eggs exposed to

DDT attempt to mate with each other. In recent years, scientists have also found that lead affects the balance of gulls, while atrazine makes goldfish hyperactive and the chemical TCDD makes the play behavior in macaques rougher.

Despite this wealth of evidence, these effects have gone largely unnoticed by toxicologists, says Ethan Clotfelter of Amherst College in Massachusetts, lead author of one of the reviews, published in August 2004 in *Animal Behavior* (vol 68, p 465).

Missing a Trick

Not only are we failing to acknowledge the scale of the problem caused by endocrine disruptors, but toxicologists may be missing a trick: changes in animal behavior could be an early warning that certain chemicals are harmful. "You might see behavioral effects long before you see a population crash," Clotfelter says.

Dustin Penn and Sarah Zala of the Konrad Lorenz Institute of Comparative Ethology at the Austrian Academy of Sciences in Vienna agree. They have just published a second review of the effects of endocrine disruptors in the same journal (DOI: 10.1016/j.anbehav.2004.01.005). "The most important point is the incredible amount of evidence that this is a widespread problem," Penn says.

Both research groups say that biologists must wake up to the fact that endocrine disruptors might explain bizarre behavior in wild animals. And both reviews reveal that different concentrations of chemicals can have unexpected effects.

Male mice exposed to low doses of some pesticides increase their scent-marking behavior, for instance, but decrease it when exposed to higher concentrations.

Damaging Doses

"Pollutants that have been considered safe when tested at medium doses could have damaging effects at lower

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doses," Penn and Zala warn in their review. And conversely, toxicologists might exaggerate the risks posed by higher doses.

Other behavioral biologists back the authors' call for biologists and toxicologists to work more closely to determine the scale of the problem. "It's been decades since the first evidence appeared that chemicals in the environment can influence behavior," says John McCarty of the University of Nebraska in Omaha, who researches the impact of pollutants on birds.

"It seems to me that this body of evidence was pushed to the background while most environmental scientists and regulators focused on mortality and cancer rates [caused by endocrine disruptors and other pollutants]."

The US Environmental Protection Agency says it cannot provide a detailed comment on the research, but promises it will investigate further. "We'll review these two scientific articles as we continue to develop an endocrine screening and testing program," a spokeswoman told New Scientist.

Geoff Brighty, ecosystems science manager at the UK Environment Agency, agrees that studying the effects of chemicals on animal behavior should be given a higher priority. "It is becoming recognized that behavior is important to look at to make sure a chemical is safe, and we ignore it at our peril."

http://www.truthout.org/docs_04/090904G.shtml



Continued from page 2 – Gender-Bending Chemicals puts Baby Boys at Risk for Cancer and Infertility

Professor Richard Sharpe, one of Britain's leading reproductive biologists, said that the chemicals block the action of the male sex hormone testosterone, or mimic the female sex hormone oestrogen.

The government adviser's report is the most detailed yet into how the chemicals endanger baby boys. Women trying for a baby have been warned to avoid contact with them.

Prof Sharpe told the Daily Mail: "You can't do anything about chemicals in the environment but you can control what you expose a baby to through your lifestyle choices.

"Because we don't know the complete list of chemicals that may be hormone disruptors, and we don't know how they interact, we can't point a finger at an individual chemical.

"The message is to avoid them, just as you should avoid alcohol and drugs."

Professor Sharpe concluded that gender-bending chemicals are "likely to account for a proportion" of birth defects in baby boys and the testicular cancer and fertility problems the boys may suffer later in life.

His report looked at studies into birth defects of boy's genitals, low sperm counts and testicular cancer. Such problems are collectively referred to as Testicular Dysgenesis Syndrome (TDS).

Testosterone-disrupting chemicals found in pesticides, drugs, plastics and household products created symptoms of TDS in laboratory animals, experiments showed.

Some of the experiments showed that the chemicals work in combination, causing problems at doses where the individual chemicals should be harmless.

The evidence that the chemicals cause problems in humans was weaker, but still showed a link between environmental chemicals and male fertility problems, the report said.

The latest figures suggest that one in six men in Britain has a low sperm count and will struggle to father a child.

Doctors are also worried by rising levels of birth defects, with 7 per cent of British boys born with partially descended testes and seven in 1,000 with malformed genitals.

The number of testicular cancer cases among men in their 20s and 30s has been doubling every 25 years.

Professor Sharpe said that TDS takes root in the period between the eighth and 12th week of pregnancy.

During this period, exposure to hormone-mimicking chemicals can interfere with testosterone production in a foetus, preventing the sex organs from developing normally.

Chemicals shown to cause problems include pesticides such as DDT, fungicides such as vinclozolin; a group of chemicals called PCBs used in electrical circuits, paints, flame retardants and glues; and phthalates, which are used to soften plastics.

http://www.telegraph.co.uk/health/children_shealth/5315684/Gender-bending-chemicals-put-baby-boys-at-risk-of-cancer-and-infertility-report-finds.html



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FEATURED ARTICLES

Low Sperm Counts and Deformed Penises: The Chemical Industry Has a Hold on Your Reproductive Future

By Joshua Zaffos

Colorado Springs Independent, June 26, 2008

I am half the man my father is.

This disturbing fortune came to me about five years ago, but not from an odd relative or a sadistic girlfriend. Instead, this dinner-table diagnosis came from Theo (short for Theodora) Colborn, an internationally known scientist who has helped develop the field of research exploring how chemical compounds interfere with the hormones that guide human development.

Known as endocrine disruption, chemicals found in computer screens and car seats, shower curtains and shampoo, plastic water bottles and prophylactics are skewing our odds against cancers and causing developmental delays and reproductive roadblocks, including declining sperm counts.

So, when Colborn informed me of my inferior manhood, I took consolation in the fact that she was indicting my entire generation -- and her own -- for loading our natural environment, our workplaces and our homes with tens of thousands of chemical compounds without really having a clue about what we're doing. Our *Stolen Future*, the book Colborn co-authored in 1996, first delivered this bad news to the general public.

More than a decade later, scientists are still conducting experiments and measuring results, from cramped basement labs at universities to expansive high-country lakes in the wilderness. The hypotheses generally aren't questions of whether chemicals are pervading and persisting in the environment, but rather how severely they are stunting our development and health. The federal government has investigated these questions with timidity, if not contempt, operating a regulatory system practically beholden to the chemical industry.

With half of my manhood at stake and hopes for a better assessment in the future, I'm wondering how we

can heed the warning signs and reverse our chemical course.

A day in my half-life

For years, I started off each day drinking coffee out of a metallic cup, likely coated with bisphenol-A, a chemical commonly used to line plastic bottles and other food and beverage cans and containers. Anyone who has lugged around a Nalgene bottle made of polycarbonate plastic, trying to save the Earth one paper cup at a time, has gotten his or her share of bisphenol-A, which leaches from containers into liquids to enter our bodies. A U.S. Centers for Disease Control study detected bisphenol-A in 93 percent of all Americans.

Inside us, bisphenol-A mimics estrogen, plugging into hormone receptors; this is endocrine disruption. In pregnant or breastfeeding mothers and young and prepubescent children, it can have critical impacts, rewiring our developmental profiles and opening up our risks for cancers and physical and behavioral abnormalities. Lab tests suggest that chronic, low-dose exposure to bisphenol-A -- like drinking out of a coated cup or polycarbonate bottle daily -- may cause women to have greater chances of breast cancer and polycystic ovary syndrome, a leading cause of infertility, and men to have increased odds of prostate cancer and reduced sperm counts.

That's a lot to think about during the day's first cup of coffee or sip of water. Now I try to stick to ceramic mugs and glasses.

As my body starts to properly caffeinate in the mornings, I usually sit in front of a laptop and do whatever it is writers do to put off writing -- checking e-mails and boxscores -- until I'm warmed up. As a computer warms up, particles inside start to fly and some catch a ride on dust. For years, I breathed in polybrominated diphenyl ethers (PBDEs) from my laptop.

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These compounds are flame-retardants, nearly universally used in couch cushions, televisions, cars and carpets. PBDEs have similar chemical structures to thyroid hormones, and, according to lab tests, they can lower our bodies' production of the real thing.

Over time, thyroid-hormone deficiencies can hurt metabolism. Hypothyroidism causes fatigue, depression, anxiety, hair loss and a waning libido. Women with low thyroid-hormone counts are five times more likely to have children with IQs that qualify them as mildly retarded, according to one study. A 2005 experiment found that a single low dose of a common PDBE given to rats in utero resulted in a class of hyperactive rodents with persistent low sperm counts.

Contemplating my future as a fat, bald, sad, edgy, dull and dim-witted bachelor isn't necessarily cause for perilous concern. Still, a generation's lacking aesthetics and sex drive is a wicked trade-off for the low combustion factors of our workspaces, living rooms and vehicles.

On the mornings when words don't flow from my fingertips, I know it's time to take a shower, an effective and healthy distraction. I used to have a vinyl shower curtain and wash with whatever shampoo was cheapest from the supermarket. Both those products generally contain phthalates (pronounced "tha-lates"), compounds that add flexibility and plasticity to fragrances and cosmetics and almost anything made out of vinyl, including children's toys and IV bags.

Phthalates are especially tenacious when it comes to tweaking with men's development, affecting androgen, as compared to estrogen, receptors. One of the first low-dose studies on phthalates, from 1999, found that exposure of pregnant female rats led to a dramatic increase in male offspring with sexual abnormalities.

For humans, studies show that as many as one in 125 newborn boys in the U.S. now arrives from the womb with a hypospadias, a condition in which the urethra does not properly extend to the end of the penis, necessitating surgery. Data suggests the incidence has doubled since the 1970s, and scientists believe phthalates or other endocrine-disrupting chemicals are responsible.

Recent research on phthalates by Rao Veeramachaneni of Colorado State University has used rabbits, which are better human surrogates than rats because they have infant and adolescent life stages; rodents basically start puberty once they're born. The results show rabbits with in utero exposure to one class of phthalate experienced a 43 percent drop in sperm count compared with healthy

animals. Rabbits exposed to phthalates in utero or during adolescence had almost twice as many abnormal sperm as normal cases. These declines in sperm quality and quantity are among the signs of "testicular dysgenesis," which also includes increased rates of undescended testicles and, most severely, testicular cancer.

Yet another study, led by Shanna Swan of the University of Rochester, suggests prenatal exposure to phthalates correlates with shorter "anogenital distance" (the space from the anus to the testicles, less clinically known as the taint) and greater probability of improper testicular descent and smaller penile volume.

In other words, size does matter, just not necessarily the way we act like it does.

Beast of body burden

I can try to avoid plastic bottles and vinyl shower curtains. I can seek out a computer that doesn't use PBDEs; a number of companies have voluntarily phased them out. My few consumer actions are roughly equivalent to fending off an infectious disease with a Kleenex.

One reason is that the federal government doesn't do much to monitor or regulate chemical concentrations in the environment.

Congress passed the Toxic Substances Control Act (TSCA) in 1976, the same year I was born. Under the law, manufacturers register commercial chemicals and the U.S. Environmental Protection Agency can test the safety of chemicals -- produced after 1979 -- and regulate their use. Or at least that's how it's supposed to work.

From 1979 to 2004, the EPA received more than 32,000 chemical applications, but agency personnel performed some level of review on fewer than one in eight cases. Eight out of every 10 applications are approved with no restrictions, often in less than three weeks. The agency has implemented restrictions on only five chemical classes, even though in the 1990s it reported that 16,000 compounds warranted concern because of their chemical structure or volume of use.

"TSCA really doesn't have the teeth to ban chemicals," says Sonya Lunder, senior analyst with Environmental Working Group, a D.C.-based watchdog organization. Another catch is something called bioaccumulation.

Some chemicals persistently build up inside us, a tally called a body burden. Mothers pass theirs onto babies in utero and through breast milk. I inherit, so to say, the body burdens of animals every time I eat a cheeseburger or splurge on sushi. In 2001, a Canadian health official estimated the average person consumes about half a microgram of PBDEs every 10 days just through meat

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FEATURED ARTICLES

Hormone Mimics (Endocrine Disruptors): They're in Our Food - Should We Worry?

Consumers Reports 1998

Might chemicals that mimic hormones be harming the human endocrine system? From top to bottom: the pituitary gland; the thyroid and parathyroid glands; the adrenal glands atop the kidneys, with the pancreas in between; and the testes (ovaries, in women). The intestines secrete hormones as well.

There has been a scattering of disturbing news reports in the last year or so about abnormalities in animals-- male fish with female sex organs, for instance, and frogs with extra legs. In their search for a cause, scientists are focusing on a class of chemicals called endocrine disrupters. Such chemicals seem to interfere with or mimic the action of hormones and thus may upset the normal growth, behavior, and reproduction of wildlife.

If these compounds are harming animals, scientists ask, are they harming people, too? Some researchers have concluded that they might be. In the past two years, dozens of conferences have focused on the effects of endocrine disrupters. The debate will only get louder with the expected release this summer of the National Academy of Sciences' long-awaited report on endocrine disrupters. Whatever the report finds, Congress has already mandated that, by August, the Environmental Protection Agency present recommendations for screening tens of thousands of chemicals for endocrine-disruptive activity and limiting human exposure to those that pose a problem.

More than a dozen federal agencies and institutes are planning nearly 400 research projects on endocrine disrupters. The chemical industry is funding studies, too. Are endocrine disrupters something to worry about or just another false alarm, like those warnings about a killer asteroid? Here's what scientists know so far, plus our tests of two types of product in which suspected endocrine disrupters are apt to hide--plastic wraps and baby foods.

The ABCs of EDs

Some endocrine disrupters, such as dioxins, PCBs, and

various relatives of DDT, are already infamous for the other problems they've created. (See "Prime Suspects," on page 55.) PCBs and DDT were banned in the U.S. in the 1970s, but dioxins are still being released-- they're byproducts of combustion and other processes. All these compounds persist at low levels virtually everywhere--in air, water, and soil. From there, they can enter the food chain, working their way into animals and, eventually, people.

They accumulate in fatty tissue, from which they are released very slowly. Other hormone mimics, less well known, are found in some plastics. To understand how these chemicals work their mischief, it helps to know a bit about the endocrine system, which has the same basic function in animals and humans. It's a complex network of glands (the thyroid, the ovaries or testes, and others) and organ tissues (the intestines) that secrete hormones. Hormones act as chemical messengers, traveling through the bloodstream to affect growth, metabolism, reproduction, and other functions elsewhere in the body.

The endocrine system is finely tuned through delicate checks and balances. Disrupters can throw off the system by sending the wrong signals or blocking the right signals. The effect is often temporary in adults, whose systems are fully developed and fairly stable. Babies and small children are more vulnerable. And there can be permanent effects on a fetus, whose normal development requires certain amounts of hormones at precise times. Change the amount or the timing, and the individual may suffer problems in behavior, immune function, neurological development, or gender development. As a link between endocrine disrupters and humans is being debated, evidence of a connection between disrupters and animals is mounting.

Animal evidence

Here are some of the bizarre things that have happened to animals:

- In a 1981 laboratory study done at the University of

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Continued from page 8 – Hormone Mimics Endocrine Disrupters: They are in our Food

California, Davis, male gulls with a feminized reproductive tract emerged from eggs exposed to levels of DDT and other synthetic chemicals similar to levels found in the wild. Similar gender-bending oddities are today being found in terns off Massachusetts and are likely due, researchers say, to as-yet-identified pollutants.

- In 1992, 12 years after the DDT relative dicofol spilled into Florida's Lake Apopka, testosterone levels in the lake's male alligators were just one-quarter to one-half their normal level, and the alligators had shrunken genitals, according to a research team led by Louis Guillette, a University of Florida zoologist. What's more, the lake's female alligators had higher-than-average estrogen levels. "Their eggs were weird looking," says Guillette, "and they didn't hatch, or the young died within the first two weeks." Guillette's team has found a new abnormality in alligators from lakes Apopka and Okeechobee--an alteration in thyroid hormones, which are linked to growth and metabolism. Guillette considers the findings important because scientists think of alligators as a "sentinel" species: Their health reflects the health of their ecosystem.
- In 1995, schoolchildren in a nature-studies class discovered frogs with five legs and other deformities in a pond near Henderson, Minn. Because frogs are another sentinel species, scientists around the country took notice. Subsequent searches turned up frogs with extra or missing legs and grossly deformed webbing elsewhere in Minnesota and in several other states. In Anacortes, Wash., a frog had an eye sprouting from behind its front leg.

Endocrine-disrupting pesticides may be the culprit--or, as some researchers have suggested, the defects might have resulted from exposure to excessive amounts of retinoids, vitamin A-like chemicals that might have come from a natural source like plants in the lake.

Of Mice--and Men?

Given the similarities between animal and human endocrine systems, it's tempting to think that what seems to be harming animals may harm people. "We have to bite the bullet," says Ana Soto, associate professor in cellular biology at the Tufts University School of Medicine. "Whatever we're finding in animals, I think we have to assume that it's very relevant to what is going on in humans." Others are much more skeptical. "I'm not saying let's dismiss

everything," Texas A&M toxicologist Stephen Safe told our reporter. "I'm saying, hey, let's back up. The evidence isn't there. Should we do more work? Sure, but let's not go bananas."

Indeed, there's no proof yet that routine exposure to these chemicals is disrupting the human endocrine system. And conclusive proof may not come. Because people aren't lab rats, researchers may never be able to rule out other possible explanations for any effects they observe. But researchers must keep asking questions. Among them:

Do endocrine disrupters affect intelligence?

When we spoke to scientists and others who believe chemicals are disrupting the human endocrine system, they often cited the work of Joseph and Sandra Jacobson, psychologists at Wayne State University. The Jacobsons have been tracking the developmental and intellectual performance of children whose mothers regularly consumed Lake Michigan fish before and during pregnancy. Those fish contain elevated levels of PCBs and other contaminants. In September 1996, the Jacobsons reported that the children of fish-eaters showed persistent, measurable intellectual impairment. This finding was highlighted in "Our Stolen Future," the 1996 best-seller that helped kick off public interest in endocrine disruption. But Joseph Jacobson has drawn no conclusion about what particular mechanism might have caused the impairment. In an interview, he called the idea that PCBs disrupted hormone function in the brain before birth "pure speculation." Early brain development, he said, is "such a complex process, and so many things could go wrong, that we just don't have any basis for concluding that it's endocrine related."

Do endocrine disrupters cause genital birth defects? Quite possibly, say researchers at the national Centers for Disease Control and Prevention. They reported last November that hypospadias, a birth defect in males in which the urinary opening is mislocated--on the underside of the penis or even on the scrotum--doubled between 1968 and 1993, and now afflicts nearly 1 of 100 newborn boys nationwide. "That makes it the most common specific type of birth defect among males," says lead researcher Len Paulozzi.

The defect is thought to result from an inadequate surge of the male hormone testosterone between 9 and 12 weeks after conception. "As you block the fetus's own testosterone, the fetus cannot masculinize itself," Paulozzi explains, "and you wind up getting these various states of feminization of the fetus, of which hypospadias is a mild form." Suspected causes include a fungicide and DDE, a breakdown product of DDT. Also possible, Paulozzi says, is that doctors have simply become better trained at recognizing and reporting less severe forms of the defect.

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Do endocrine disrupters cause prostate problems?

Frederick vom Saal, of the University of Missouri, Columbia, exposed mouse fetuses to tiny doses of the estrogen-like chemical bisphenol A, found in plastic dental sealants and food- can linings. The mice that emerged had enlarged prostates overburdened with receptors for testosterone as well as testes that produced fewer sperm than usual. Based on these studies, vom Saal hypothesizes that a corresponding overload in men could lead to increased vulnerability to prostate enlargement and perhaps to a decline in sperm count.

Do endocrine disrupters lower sperm counts?

In 1992, Danish endocrinologist Niels Skakkebaek determined that sperm counts had declined by 50 percent worldwide from 1938 to 1990. He later suggested that PCBs and pesticides, including DDT, may have been the cause. But sperm counts are not down everywhere, said Harry Fisch of Columbia University's College of Physicians and Surgeons in 1996. They varied greatly in different areas, and hadn't declined at all in 25 years in the three U.S. cities he analyzed.

Yet when Shanna Swan of the California Department of Health Services recently reanalyzed Skakkebaek's data, adjusting for regional variations including the type Fisch had found, she discovered an even steeper global decline. Of all the explanations offered so far, Swan says, endocrine disruption seems the "most coherent and best supported by animal data." Over the next few years, Swan, with researchers in Europe and Africa, will be analyzing regional differences in semen quality. They will compare the sperm count of fathers-to-be with their level of sex hormones, steroids, and the time it took their wives to conceive, a sensitive marker of fertility. Stay tuned.

Do endocrine disrupters increase the risk of breast cancer?

In 1995, British investigators reported that some plasticizers, called phthalates, acted as estrogens, enhancing the growth of breast-cancer cells in lab studies. Two years earlier, Mary Wolff, a professor at New York City's Mount Sinai School of Medicine, had studied 58 women and found that the higher the levels of DDE in the blood, the greater a woman's risk of breast cancer.

But follow-up studies failed to find such strong correlation. Last year, Wolff teamed up with Harvard researchers to examine DDE and PCB levels in a larger

sample of women. This time, she found no evidence that exposure to those chemicals increased the risk of breast cancer. Now a study has come out suggesting an association between PCBs and breast cancer--but only for women who have never lactated. Wolff's reaction: "I don't know. Nature's never, never simple."

In search of better data

The conflicting reports may mean that these compounds don't harm people. More plausibly, they may mean that the scientific tools available are too crude to see any harm that's there.

Indeed, the several studies that have looked for broad, population-wide effects have a built-in limitation: Even people in remote locations, such as Canada's Baffin Island, harbor traces of PCBs, DDT, and dioxins. There are no unexposed "controls" to help highlight the effects of exposure. But research, especially on possible effects in humans, continues.

Soto of Tufts is joining researchers at the University of Granada in Spain to develop precise ways to measure patients' blood and fat for total estrogens, including those originating outside the body, such as from chemical pesticides and plastics. Her team is testing two groups of patients--boys with undescended testes and women with breast cancer--to see whether exposure to environmental estrogens correlates with birth defects or disease. The National Institutes of Health and the Centers for Disease Control and Prevention hope to begin clinical tests that would help them estimate how many Americans harbor traces of chemicals that could mimic hormones.

What's more, the Chemical Manufacturers Association is investing some \$4 million to study endocrine disrupters. "We're taking this very seriously," says Jon Holtzman, CMA's vice president for communications. "When a plausible theory is proposed and consumers are depending on the safety of the products we produce, we can't walk away." More work lies ahead--rigorous research on everything from how endocrine disrupters affect individual cells to whether they affect groups of people. Because science progresses by the slow accretion of innumerable facts, a tidy explanation is not likely anytime soon.

Recommendations

Although research indicates that manmade chemicals may be causing problems in wildlife, at least in localized areas, it's too soon to tell whether hormone mimics pose health risks for people. But should we ignore warning signs and simply hope the news will eventually be good?

It makes more sense for government, industry, and individuals to take reasonable steps to limit exposure. The EPA and industry should modify processes that release

Continued from page 10 – Hormone Mimics Endocrine Disrupters: They are in our Food

dioxins, for instance, and the FDA and industry should phase out the use of plasticizers suspected of causing endocrine problems. Such a phase-out is certainly possible: Some plastic wraps already contain no plasticizers. If in the face of all that is still uncertain, you want to reduce your ingestion of the suspect compounds, here are several low-cost strategies that may help:

Consider using alternatives to pesticides and insecticides on lawn and pets. Wash fruits and vegetables thoroughly or, better yet, buy organic foods. Limit your ingestion of fatty foods (where the compounds can accumulate). Heed official advisories about fish contamination. And if you reheat food wrapped in plastic, make sure the wrap does not touch the food. The attitude that may serve us all best is one of prudent caution, not blissful ignorance.

<http://www.mindfully.org/Pesticide/Hormone-Mimics-In-Food.htm>



Continued from page 7 - Low Sperms Counts and Deformed Penises

and dairy. When it comes to endocrine disruption, you are what you eat.

I have roughly 700 different synthetic chemicals in my body. That number probably won't be going down any time soon. Every single day, the United States produces or imports 42 billion pounds of chemicals, about 140 pounds for every American. I also am what I eat out of, and with, and around.

The same compounds that bioaccumulate in our bodies also linger in the environment. The heavy-duty pesticide DDT earned its notoriety -- and nearly worldwide prohibition -- because its lethal toxicity could kill off dozens of birds after an application. It is also a "persistent organic pollutant" that remains in the environment for a long time and can mimic estrogen and lead to birth defects. It's probably fair to call DDT the O.G. of endocrine-disrupting chemicals.

Bans on DDT and other persistent organic pollutants led to the engineering of the new class of chemicals we use today. It's obvious how they've improved our lifestyles, if not our lives. But studies suggest we have traded obvious poisons for insidious ones.

Pollution in the park

Situated in the ice-sculpted Colorado valley of Glacier Gorge, Mills Lake is considered one of the most stunning features in Rocky Mountain National Park. At nearly 10,000 feet and fed by snowmelt from the Continental

Divide, Mills should be among the purest pools of mountain water in existence. But the presence of "intersex" rainbow trout, males with some very female characteristics, suggests otherwise.

This February, the National Park Service issued a report through its Western Airborne Contaminants Assessment Project (WACAP) detailing measurable levels of chemicals and heavy metals throughout "pristine" corners of our national parks.

"The transsexual fish was really something we hadn't anticipated," says Dixon Landers, a U.S. Environmental Protection Agency research scientist who participated in the WACAP.

Based on the project's findings, Landers says most parks' contaminant counts correlate with the local pollution measured in the surrounding snowpack. In Rocky Mountain National Park, that means mercury from power plants along the Front Range and chemicals from agricultural pesticides. Researchers also reported levels of persistent organic pollutants, including DDT, once again proving the compounds' lasting risks.

DDT, which hasn't been used in the U.S. since 1972, could plausibly be responsible for transsexual fish in the middle of the continent. Scientists also point out that airborne pollution moves around the world, so organic pesticides could be coming from countries that still use them. Then again, the project also detected levels of PBDEs in parks, suggesting another pathway.

In 2004, University of Colorado scientists surveyed fish in Fountain Creek, downstream of Colorado Springs' wastewater-treatment facilities, and found intersex flathead chubs and other sexual deformities.

Around the same time that James Dobson was raising questions over SpongeBob's sexual preferences, a much more serious case of sexual deviancy was brewing in his backyard stream.

The Fountain Creek results mirror earlier findings from around the state. The same researchers have identified intersex fish swimming below sewage plants in Boulder and Denver; they couldn't find a single male white sucker in the South Platte River downstream of the state capital. The scientists reported many more female than male fish, female fish with poor reproduction rates, stunted gonads in both sexes, and males producing vitellogenin, the main ingredient of yolks for offspring.

Concentrations of chemicals and steroid hormones, including synthetic estrogen used in birth control and synthetic testosterone used to bulk up livestock, are typically higher in streams below treatment plants because

Continued on page 12

the contaminants accumulate at the facilities.

That is one of the reasons for treatment, but the various processes used in most wastewater plants don't effectively remove many of these compounds.

A forthcoming study from the University of Colorado scientists and their colleagues has more specifically analyzed why the fish in these locations are suffering these maladies. The researchers report a "complex mixture of endocrine-active chemicals" in Boulder Creek, including bisphenol-A, steroid hormones and alkylphenols, which are estrogen-mimicking compounds used in air fresheners and laundry detergents, and as a spermicide on condoms, diaphragms and other contraceptives.

Other studies are advancing our understanding of chemicals' impacts on life. A group of Colorado State University researchers led by Thomas Borch, professor of environmental chemistry, is looking at measurable amounts of androgens and estrogens along the Cache la Poudre River, upstream and downstream of Fort Collins, to see what happens to the compounds over time.

"This particular study stands out because we've tried to address the question: What are the present compounds being broken down to?" Borch says. "It's beyond the fact that these could have endocrine-disrupting effects."

Borch refers to other research suggesting synthetic chemicals can impact animals' levels of pheromones, a class of hormones that cue behavioral responses in other members of a species.

"We're just being able to reliably detect these compounds," he adds.

Meanwhile, the mix of pharmaceuticals, including antibiotics and mood stabilizers, steroid hormones and other compounds passing through standard wastewater treatment processes -- and into drinking water supplies -- was the focus of a recent Associated Press investigation. A Senate committee has announced it will hold hearings on the topic.

A dangerous double standard

Congress, actually the U.S. House of Representatives, is investigating the federal government's regulatory behavior regarding chemicals. An ongoing inquiry should help reveal the extent of industry influence over recommended rules for synthetic compounds.

Rather than yielding a regulatory hammer, the EPA generally allows the chemical industry to set its own standards voluntarily and conduct its own evaluations

on endocrine disruption and chemical impacts on children.

In cases where chemicals have gone through formal reviews, the results haven't always panned out for public health and safety.

The Environmental Working Group recently exposed that the EPA had removed a government scientist from an external-review panel of deca-brominated diphenyl ester, one of the fire-retardant PBDEs, after the American Chemistry Council complained about her "appearance of bias."

Other PBDEs have been outlawed in the U.S. since 2004 because of their effects on human thyroid systems and brain development, and their rates of bioaccumulation; body burdens drop when we stop using these chemicals. The impacts of deca weren't as conclusive a few years ago, but recent studies show the compound can break down into other PBDEs and cause endocrine disruption.

Deborah Rice, an environmental toxicologist with the Maine Center for Disease Control and Prevention and a former EPA scientist, has testified, to her state Legislature, in favor of banning deca.

That was enough for the chemical industry to claim she was unqualified to serve as the deca panel chair. The EPA complied with the industry's complaint last summer, citing the "perception of a potential conflict of interest."

"The American Chemistry Council's strong support of science was the basis for its recent letter to the Environmental Protection Agency regarding a member of the agency's external peer-review panel for [PBDEs]," says Tiffany Harrington, a spokeswoman for the council. "The chairperson's pre-existing bias advocating the ban of deca-BDE is not consistent with the scientific standards of an independent peer review."

Even with an IQ possibly deflated by flame retardants, Rice's prior recommendations, based on peer-reviewed research, don't sound like "bias" to me. Meanwhile, 17 scientists with financial or other ties to the chemical industry currently serve on seven EPA review panels, according to the Environmental Working Group.

"There's a dangerous double standard coming out of the EPA about who is biased," Lunder says.

So far, these cases haven't warranted the agency to remove any panelists. The U.S. House Committee on Energy and Commerce is now gathering agency documents on the issue as part of another investigation into regulations on the use of bisphenol-A, specifically in children's products, and the chemical industry's possible manipulation of public opinion relating to chemical safety.

"The public depends on EPA peer-review panels to help

ensure the products they use every day are safe," says Rep. John D. Dingell, D-Mich., the committee chair. "The EPA seems to have a backwards way of composing these panels. The EPA is disallowing scientists who have valid public-health concerns about products, while encouraging participation by so-called experts who are paid by the chemical industry."

In the midst of the congressional investigation, bisphenol-A has gotten another once-over, even if U.S. regulators aren't changing their stances. The Canadian government announced it will likely label bisphenol-A as a toxic compound. Wal-Mart declared it would remove baby products with the substance from its shelves in Canada and eventually the U.S. Nalgene stated it would remove bisphenol-A from its water-bottle products.

Perhaps most telling, officials at the U.S. National Toxicology Program released an April report that concluded the use of bisphenol-A, even at low levels, should cause "some concern" toward health risks for fetuses, babies and children. Despite the wave of scientifically informed reports and consumer actions, the U.S. Food and Drug Administration, another agency with regulatory oversight over chemicals, claimed there was no reason for Americans to worry themselves over bisphenol-A.

The Environmental Working Group is pushing for TSCA reform and is also supporting private and local- and state-level efforts to more effectively regulate potentially harmful chemicals. Many computer companies no longer use PBDEs, partly a result of tougher chemical restrictions in Europe.

Corporations and academics are advocating for and following through on "green chemistry" practices, a comprehensive rethinking of manufacturing processes. Some cities are promoting their own pharmaceutical "takeback" programs, to limit the flushing of unused pills. The federal government's takeback guidelines are considered weak and confusing; in some cases, they encourage flushing pills to avoid drug abuse.

In February, the EPA announced it would try to eliminate a backlog of 8,000 untested chemicals through a new "computational toxicology" initiative. Robert Kavlock, director of the agency's National Center for Computational Toxicology, says the program will use molecular and cellular tests performed by automated robots, instead of animal testing in labs. Whereas a chemical review through animal-toxicology studies can take five years and cost between \$5 million and \$10 million, the computational program can test

thousands of compounds at several concentrations in a single afternoon.

The breakthrough sounds encouraging, but critics question if molecular and cellular tests can capture health effects that impair entire organisms. Kavlock says the program's first phase will measure results against existing animal-toxicity data for chemicals to address that concern.

Global warning

During my conversation with CSU's Thomas Borch, I ask him to compare our understanding and acceptance of endocrine disruption with that of another subtle, global environmental epidemic: climate change. Borch says the analogy is apt, believing that the impacts of endocrine-disrupting chemicals we see today are comparable to the signs of global warming that people began to acknowledge in the 1990s. He recognizes this assessment might be conservative; some colleagues, Borch adds, would say the consequences of our society's chemical romance are already measurable and apparent, and they demand appropriate policy changes.

I started surfing through the evidence five years ago.

After first meeting Theo Colborn, I began spending time with her, asking lots of questions and reading whatever she handed me. I even worked for her for a short while, organizing files and sorting through research papers and reports.

Today, at 81, Colborn is sharp as a tack and president of TEDX, Inc., an acronym for The Endocrine Disruption Exchange that rhymes with a certain overnight-delivery company. The nonprofit research clearinghouse compiles and circulates peer-reviewed studies on low-dose chemical exposure, allows scientists to compare results, and helps the media and the public understand what we are doing to our planet and our bodies.

One day, while I was helping Colborn at her home, where a massive file cabinet piled high with draft studies and award plaques sits in her kitchen, she opened a drawer to find a report. Instead, she discovered a folder, filled with poetry. "Oh! You need to have this," she told me and pulled out a photocopy of a poem, which is frequently attributed to Goethe and closes with the oft-quoted couplet:

"Whatever you can do, or dream you can, begin it. Boldness has genius, power and magic in it. Begin it now."

The inspirational verse on mind over matter is intriguing, coming from Colborn. Backed by decades of research and exchanges with fellow scientists, she firmly believes chemicals amassing in our bodies may not only outweigh, but be diminishing, our minds' capabilities.

The words are a testimony to the ideal that if we are willing

to inform ourselves and commit to intelligent decisions about our use of chemicals, it's not too late to affect change and avert a global crisis.

Begin it now.

Joshua Zaffos writes from Fort Collins, Colorado. His work has appeared in High Country News, The Denver Post, Fly Fisherman and Orion.

<http://www.alternet.org/story/89453/>



Male Fish Growing Eggs Found in Potomac

Sewage, hormone pollution may be cause

The Associated Press
December 21, 2004

SHARPSBURG, Md. - Male fish that are growing eggs have been found in the Potomac River near Sharpsburg, a sign that a little-understood type of pollution is spreading downstream from West Virginia, a federal scientist says.

The so-called intersex abnormality may be caused by pollutants from sewage plants, feedlots and factories that can interfere with animals' hormone systems, The Washington Post reported.

Nine male smallmouth bass taken from the Potomac near Sharpsburg, about 60 miles upstream from Washington, were found to have developed eggs inside their sex organs, said Vicki S. Blazer, a scientist overseeing the research for the U.S. Geological Survey.

Authorities say the problems are likely related to a class of pollutants called endocrine disruptors, which short-circuit animals' natural systems of hormone chemical messages.

Officials are awaiting the results of water-quality testing that might point to a specific chemical behind the fish problems, Blazer said. "It certainly indicates something's going on," Blazer said of the new findings in Maryland. "But what, we don't know."

The Potomac River is the main source of drinking water for the Washington metropolitan area and many upstream communities. It provides about 75 percent of the water supply to the 3.6 million residents of Washington and its Maryland and Virginia suburbs.

Blazer, who works at a federal fish lab in Leetown, W.Va., said she found the latest abnormalities last week while examining tissues from fish taken from the river

near Sharpsburg.

The same symptoms had previously been found about 170 miles upstream, in the South Branch of the Potomac in Hardy County, W.Va. Blazer and other scientists discovered the problem there last year while investigating a rash of mass fish deaths. U.S. Fish and Wildlife Service researchers are seeking money for a much larger study across the Potomac watershed.

Discarded hormones

Endocrine disruptors comprise a vast universe of pollutants capable of driving a hormone system haywire. Some are hormones themselves — such as human estrogen from women taking birth-control pills or animal hormones washed downstream with manure — that can pass through sewage plants untouched. In Hardy County, officials were especially concerned about chicken waste from poultry farms.

Other endocrine disruptors are hormone "mimics" — industrial chemicals or factory byproducts which confuse the body because they are chemically similar to natural hormones. These pollutants are often found in very low concentrations, so until recently no equipment could detect them. But the first nationwide survey, in 1999 and 2000, found hormones in about 37 percent of streams tested.

Many scientists are concerned that people, as well as other animals, might be affected. "It's not good news that there's something that feminizes male fish in your water," said Gina Solomon, a senior scientist at the Natural Resources Defense Council.

But the Environmental Protection Agency has not set standards for many of these pollutants. Because of this, many drinking-water plants make no special efforts to remove them.

Authorities in West Virginia are investigating whether there is a link to higher rates of certain cancers in people there.

A recent survey of cancer in Hardy County, where some residents get drinking water from the South Branch, found rates of cancer of the liver, gallbladder, ovaries and uterus that were higher than the state average. All four cancers can in some cases grow faster in the presence of estrogen or chemicals that mimic it, cancer experts said.

"It is at least theoretically possible that those two concepts are worth thinking about side-by-side," said Alan Ducatman, chairman of the Department of Community Medicine at West Virginia University.

<http://www.msnbc.msn.com/id/6741471/>



Male Fish becoming Female?

Researchers worry about estrogen and pollutants in the water

By Tom Costello

NBC News
November 8, 2004

BOULDER, Colo. - Researchers in Colorado have made a startling discovery. Fish, apparently male, are developing female sexual organs. Scientists believe it's the result of too much estrogen in the water and they're finding estrogen in rivers across the country.

In Colorado's rivers and streams, scientists are waist-deep in ritual of the season, using electric currents to stun native fish to the surface where they're measured and checked. But what they discovered in the white sucker fish has got even veteran scientists concerned.

"I've done a lot of studies throughout my career which extends back to 1973," says research associate John Woodling. "This is the very first time that what I've found scared me."

"This fish has characteristics of both male and female," says Dr. David O. Norris of the University of Colorado, Boulder.

And scientists have found lots of them in three Colorado rivers, all of them downstream from sewage treatment plants.

In the Boulder Creek, female white suckers outnumbered males five to one and 50 percent of the males also had female sex tissue.

Researchers say the cause is too much estrogen in the water, a natural female hormone that is found in every sewer system. But also, they say, certain chemical compounds in detergents and soaps can mimic estrogen.

Barbara Biggs, of Denver's largest sewage plant, says most of the nation's sewage plants simply can't remove all the estrogen in the water.

"We're concerned about the effect on aquatic life, but we're also concerned about our ability to actually treat for these estrogens and estrogen mimickers," says Biggs.

Estrogen mimickers are believed to be caused by chemicals called nonylphenols, found in everything from paints and rubber to cosmetics and plastics. They are considered a possible cause of kidney, eye, liver and reproductive problems.

They've been banned in much of Europe and are under review in Canada, but are still common in America, where they are flowing out of sewage plants and into clean water flowing into America's rivers.

Government researchers recently found natural estrogens and estrogen mimickers in 80 percent of the streams they tested in 30 states.

"We would be ingesting those chemicals, would absorb them, and they would add to whatever natural hormones we already have in the body," says Dr. Norris.

No one is certain what the impact is on humans. But since finding evidence that estrogen may be turning male fish into female fish, scientists are now looking at what it means for the nation's drinking water.

In a state that prides itself on living in harmony with nature, this is evidence, say researchers, of a hormonal imbalance.

<http://www.msnbc.msn.com/id/6436617/>



Male Bass Producing Eggs

Pollution suspected cause of anomaly in Potomac's south branch

By David A. Fahrenthold

The Washington Post
October 15, 2004

MOOREFIELD, W.Va. - The South Branch of the Potomac River is as clear as bottled water here, where it rolls over a bed of smooth stones about 230 miles upstream from Washington. But there is a mystery beneath this glassy surface.

Many of the river's male bass are producing eggs.

Scientists believe this inversion of nature is being caused by pollution in the water. But they say the exact culprit is still unknown: It might be chicken estrogen left over in poultry manure, or perhaps human hormones dumped in the river with processed sewage. Chances are, it is not something that federal and state inspectors regularly test for in local waters.

The discovery has made the South Branch the latest example of an emerging national problem: Hormones, drugs and other man-made pollutants appear to be interfering with the chemical signals that make fish grow and reproduce.

While researchers look for answers in West Virginia, other scientists are testing Rock Creek, and another group is seeking financial support to test the rest of the Potomac to see whether they can find the same troubling effects downstream.

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FEATURED ARTICLES

What's in the Water?

Better detection tools reveal possible ecological 'villains' – from hormones to fire retardants – in US streams and rivers

By Peter N. Spotts

**The Christian Science Monitor
March 21, 2002**

From its headwaters at Echo Lake in Hopkinton, Mass., the Charles River glides past yards, saturates wetlands, and slips under highways before emptying into Boston Harbor.

Over the years, this 80-mile odyssey through 23 cities and towns has left what seemed to be a faint imprint on the Charles's tea-colored water. But advances in the ability to detect pollutants are giving scientists a clearer idea of the nature of that imprint – and is also triggering interest in research on whether these pose a threat to the environment and to humans.

The chemicals range from fire retardants and detergent byproducts to prescription drugs, antibiotics, and hormones.

Known as organic-waste contaminants, these compounds pass through sewage-treatment plants virtually untreated. They represent the vanguard of what researchers have dubbed emerging contaminants: chemicals whose presence in US rivers, streams, and lakes has gone undetected for years and whose effects – singly and in combination – on fish, aquatic plants, and humans often are poorly understood.

Last week, the United States Geological Survey (USGS) released its first survey of organic-waste contaminants in US surface waters, and the Charles River has plenty of company. Researchers found organic-waste contaminants in 80 percent of the 139 streams and rivers that were tested in 30 states.

During the course of the survey, which ran from 1999 through 2000, the researchers found 82 compounds out of the 95 they sought.

The researchers acknowledge that the sites were selected because they presented a high likelihood that the contaminants would be found. The survey was as

much a test of new sampling technologies as it was an exercise in environmental monitoring. But the target compounds also were selected because several are beginning to appear in scientific journals as potential ecological villains.

According to Herbert Buxton, a USGS scientist who took part in the survey, "Thirty-three compounds are known or suspected to be hormonally active." These chemicals, which include steroids, can affect the growth and development of aquatic life.

Assessing the risk earlier

Dr. Buxton and his colleagues note that the compounds they found appeared in concentrations that rarely violated drinking-water or aquatic-life standards.

But, he adds, many of the compounds have no such guidelines. Moreover, samples exhibited chemical stewards of up to 38 contaminants, and little is known about how these interact, he says.

"We shouldn't confuse the ability to measure these concentrations with whether or not they're harmful," Buxton cautions, noting that these are two separate issues.

However, he adds, the ability to measure organic waste contaminants in ever weaker concentrations allows researchers to focus on questions of risk early.

Compared with other parts of the world, the United States is a late bloomer on the issue of these emerging organic wastewater contaminants, particularly pharmaceuticals and antibiotics, according to Christian Daughton, who heads the environmental chemistry branch at the Environmental Protection Agency's National Exposures Research Laboratory in Las Vegas, Nev.

Continued on page 17

The sources for these compounds vary. Hormones and antibiotics in animal feed appear in waste and can leach into local streams and rivers. Drugs and antibiotics designed for humans move through sewage systems.

Tossed into the trash, such leftovers also are often carted off to landfills, where seeping rainwater can dissolve the capsules and carry away the compounds they contain.

EPA chemist Wayne Garrison was the first to identify drugs in sewage, in the mid-1970s. His chemo-sleuthing turned up evidence of caffeine, aspirin, and nicotine. "It was noted, then people shrugged and moved on," Dr. Daughton says.

The issue lay dormant until the 1990s, when the Europeans tested samples from their waterways and found evidence for a range of human and agricultural pharmaceuticals.

"The Europeans have a higher density of urban life around surface waters" than does the US, Daughton says in explaining why European researchers were quicker to focus environmental research on human and animal drugs in their waterways.

Moreover, European farming practices, antiquated and ill-maintained sewer systems, (particularly in the former East bloc), and the flow characteristics of many European rivers raised the likelihood that drugs were finding their way back into drinking water.

Daughton notes, for example, that following the fall of the East bloc in the early 1990s, scientists found evidence of drugs in the former East Berlin's tap water.

The research in Europe and rising concerns among public-health researchers and officials in the US triggered the USGS study, says Buxton, who coordinates the toxic-substances hydrology program at the USGS office in Trenton, N.J.

Troubling presence of antibiotics

To ecologist Rebecca Goldberg, the most troubling set of ingredients is antibiotics, particularly down on the farm.

"The use of antibiotics in agriculture is growing," notes Dr. Goldberg, senior scientist with Environmental Defense, a New York-based group. Of particular concern, she says, are those fed each year to hogs, chickens, and cattle to promote growth. By some estimates, these "subtherapeutic" doses constitute 8,000 tons of antibiotics a year.

The concerns arise over the prospect that over time, the bacteria these antibiotics are designed to destroy will grow increasingly resistant to the compounds and at a faster pace than would be the case if the antibiotics were

used only to treat animals diagnosed with disease.

In addition, over the years antibacterial agents have become common in soaps and other personal-care products, which wind up being rinsed down the sink and into the sewer system.

For his part, the EPA's Daughton is focusing his research on the effects pharmaceuticals may have on aquatic environments.

"Drugs are designed for people, so not much has been done to test them on aquatic organisms," he says.

Thus, he continues, the presence of drugs in rivers, lakes, and streams may have a more serious effect on fish, shellfish, and other organisms they rely on for food than on humans. The problem is that little is known about the impact of drugs on aquatic ecosystems.

Research in this area could become more important as drug companies develop new, more potent compounds. Daughton notes that the drug companies are intensely interested in results coming out of the federal Human Genome Project.

That project aims by the end of next year to complete its goals of identifying all of the estimated 30,000 genes in human DNA, and determining the sequence of four basic chemical building blocks that DNA is built upon.

Drug companies, he says, hope to use data from the project to develop new, more potent compounds for battling a range of diseases -- compounds that, if history is any indication, also could wind up in waterways.

Already, he notes, studies have shown that antidepressants can trigger premature spawning in shellfish, while other compounds used to treat heart conditions have blocked the ability of fish to repair damaged fins.

The canary in the mine

Even less well-known are the effects these and other compounds might have in combination, he says.

Some pharmaceuticals include compounds also found in pesticides, according to Marsha Black, an aquatic toxicologist at the University of Georgia at Athens.

Armed with a \$500,000 grant from the EPA, she is heading a team that will be looking for five commonly prescribed antidepressants in samples taken from wastewater treatment plants.

Already, Dr. Black has documented one antidepressant's lethal effects on sand fleas. While most people might not mind fewer of these tiny crustaceans nipping at them, these creatures, like canaries in a coal mine, provide researchers with valuable clues about the quality of surface waters, she says.

Not your average contaminants

Using new technology, scientists are finding chemicals in US rivers, streams, and lakes that have gone undetected for years.

These "emerging contaminants" include:

- Steroids.
- Nonprescription drugs.
- Insect repellent.
- Detergent byproducts.
- Disinfectants.
- Plasticizers.
- Fire retardants.
- Antibiotics.
- Insecticides.
- Reproductive hormones.
- Other prescription drugs.
- Antioxidants.
- Fragrances.
- Solvent.

<http://www.csmonitor.com/2002/0321/p11s02-sten.html>



Continued from page 15 – Male Bass Producing Eggs

"Whatever's doing this to the fish may be the canary in the mineshaft," said Margaret Janes, a West Virginia activist with the Appalachian Center for the Economy and the Environment.

Could it harm humans?

Scientists say it's still too early to tell what these findings will mean for the bass population in the South Branch; they aren't sure whether the affected males are still able to reproduce. And no one is aware of any effects on human health in the Potomac watershed.

But scientists believe that fish might be the first to absorb any dangerous chemicals that might later affect humans.

"They're likely to be hit first," said Mike Focazio, a researcher with the U.S. Geological Survey. "We look there, and it seems to be happening."

The situation in West Virginia was discovered by accident, when scientists from the state and the geological survey were called in to investigate reports that fish in the South Branch were developing lesions and dying en masse.

They dissected dozens of bass caught last summer, mainly smallmouth bass. They found no obvious cause for the lesions or deaths, but did discover that 42 percent of the male bass had developed eggs inside their sex organs.

The study surprised scientists. Though the South Branch has been cited for problems with bacteria from poultry manure, state officials said it did well on most aspects of water-quality testing.

"We always have, and still do, look at this as one of our highest-quality fisheries," said Patrick Campbell of the state Department of Environmental Protection. "It's counter-intuitive to think we would have this type of problem out there."

'An alarming situation'

But the problem is there: A follow-up survey in the spring found even higher rates of "intersex" bass — as the affected males are called. A study of 66 male smallmouths from the South Branch found that about 79 percent showed such symptoms, according to U.S. Geological Survey data.

The scientists are now analyzing water samples from the South Branch and the Cacapon River — a nearby Potomac tributary where intersex bass were also found. The chemicals they're looking for now are not the well-known pollutants that the state already tests for, such as nitrogen and phosphorus from manure and metals from mine runoff.

Instead, the culprit is probably in a class called "emerging contaminants," which includes everything from caffeine and prescription drugs to hormones excreted by livestock or humans.

Some of these pollutants have been linked to developmental problems in wildlife. Scientists believe that fish, especially, absorb hormones from other animals, as well as other chemicals that their bodies mistake for hormones.

One recent study near sewage plants in Colorado found male fish whose bodies were trying to produce eggs and some females whose reproductive systems were out of sync. Other studies have found similar effects from the hormones in cow manure and from chemicals from a wood-pulp plant. "It is certainly an alarming situation that we're seeing more and more gross effects," said David O. Norris, a professor who worked on the Colorado study.

These emerging contaminants were hard to detect without the finely tuned equipment developed recently. The first nationwide survey, conducted in 1999 and 2000, found hormones in about 37 percent of the streams surveyed and caffeine in more than half.

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Continued from page 18 – Male Bass Producing Eggs

The only testing in the Potomac, done in Washington in 2002, found low levels of caffeine, plus the insecticide DEET and chemicals produced when a body breaks down nicotine. There were also a few suspected endocrine disruptors, including chemicals found in hand soap and household cleaners.

As of now, little is done to test for these chemicals — either in river water or in drinking water. The U.S. Environmental Protection Agency has not set standards, saying more research is needed to determine which contaminants are harmful and what levels are unsafe.

West Virginia, Virginia, Maryland and the District do not test river water regularly for drugs or hormones. The same goes for drinking water after it is processed by the Washington Aqueduct, supplying the District, Arlington County and Falls Church, and the Washington Suburban Sanitary Commission.

Still, the West Virginia study has spurred scientists to look for more information. Researchers at the U.S. Fish and Wildlife Service are seeking money for a much larger study across the Potomac watershed. They want to look for intersex bass and potentially disruptive chemicals in sites including the Blue Plains sewage plant in Southwest Washington.

Another federal study is underway in Rock Creek, looking for intersex symptoms and other health problems in a species of fish called white suckers.

Scientists across the region stressed that their work is just beginning. "We really don't know what's going on," said Vicki S. Blazer, a researcher for the geological survey in West Virginia.

<http://www.msnbc.msn.com/id/6253193/>



Fish on Prozac? How Depressing!

Antidepressant ingredient detected in Texas lake water

DALLAS

Oct. 23, 2003 — What could be more peaceful, more restful or more relaxing than dropping a line into a quiet Texas lake and trying to hook a fish that is on Prozac? According to a study by a Baylor University toxicologist, fluoxetine — the active ingredient in the antidepressant Prozac — is making its way to a lake in the Dallas area and into the tissue of the freshwater blue gill fish.

BRYAN BROOKS, an assistant professor of environmental studies at Baylor said the fluoxetine most

likely made its way through a waste water treatment plant and into a river that feeds into Lake Lewisville, northwest of Dallas.

Brooks will present his findings next month at a conference of the Geological Society of America in Seattle.

While he has been asked several times about whether fish on Prozac find pleasure in floating aimlessly and no pain when hooked by a fisherman, Brooks said the most important part of his findings are that some pharmaceuticals can make their way through water treatment plants and back into waterways.

Brooks said the fluoxetine, and a metabolized compound similar to it, most likely made their way into the water systems from the urine of users or through people flushing Prozac down the toilet. The waste water facility was not equipped to remove the compounds, which then made their way into the blue gills, and perhaps other aquatic life.

"If we release something in the environment, we need to understand what will happen to it," Brooks said.

Brooks said his findings lead to a bevy of other questions.

How many pharmaceuticals can escape water treatment? Can these chemicals harm the water supply? How widespread is the problem? What long-term health effects might these pharmaceuticals have on aquatic life and humans?

But, unfortunately, the nonscientific community seems to be more interested in the idea of fish on Prozac.

Brooks said the exposure of the fish to fluoxetine is below therapeutic levels. He is studying how current exposure might affect the ability of the fish to find food, fight off predators and find a mate.

And if the blue gills were exposed to enough of the antidepressant, the drug would likely have similar effects in the fish that it does in humans.

"They would be happy fish," Brooks said.

<http://www.msnbc.com/news/984141.asp>



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THE AFRICAN TRADITIONAL HERBAL RESEARCH CENTRE

Blackherbals at the Source of the Nile UG LTD.



Fish Sex Change Investigated

CU group establishes treatment plant effluent as culprit

By Boonsri Dickinson and Todd Neff

December 10, 2006

In 2004, David Norris reported that fish just below the Boulder Wastewater Treatment Plant's outflow pipe were changing sex.

Two years later, the University of Colorado integrative physiology professor has expanded his study, which now involves one "Fish Exposure Mobile" research trailer in operation and a second on the way.

Science done in the trailer has verified Norris' 2004 study and shown that surprisingly low concentrations of treatment-plant effluent can change male fish into females.

The 2004 study showed that certain chemicals from pharmaceuticals and personal-care products made it through the Boulder Wastewater Treatment Plant and into Boulder Creek. Ninety percent of the white suckers swimming downstream of the plant were female. Upstream, there was an even split.

"What we see in the fish downstream is as if they are taking birth control pills," Norris said.

The female fish — both the transsexuals and the original girls — had smaller-than-average ovaries. The remaining males produced less sperm, showing the water effluent also has contraceptive effects, he said.

The chemicals are believed to come from excreted birth-control hormones, natural female hormones and detergents flushed down toilets and drains. In the ecosystem, they are known as endocrine disrupters, settling into cell receptors intended for hormones and garbling the body's chemical communications.

To bolster his evidence, in 2005 Norris and colleague Alan Vajda, a CU research associate, set up the Fish Exposure Mobile in a trailer borrowed from the Colorado Division of Wildlife. U.S. Geological Survey scientists Larry Barber and James Gray also are working with Norris' team, and the city of Boulder's cooperation also has been vital, the scientists say.

"I consider the city an equal partner," Barber said. "Without their cooperation and encouragement to do good science and answer questions regardless of implications, it wouldn't have happened."

Where Norris and Vajda are what Barber called "world-class endocrinologists," Barber and Gray are chemists

who have advanced detection techniques to the point they can spot human estrogen in concentrations as low as 0.2 parts per trillion.

They needed such exactitude because human estrogen, or 17 beta estradiol, affects fish at concentrations as low as one part per trillion — the equivalent of a pinch of salt in an Olympic pool, Norris said.

Barber said volumes of human estrogen in the pure treatment-plant effluent range from one part per trillion to about 10 parts per trillion.

The Fish Exposure Mobile, parked next to the creek on sewage treatment plant property, pulls water directly from the plant's outflow pipe and can dilute it using precise volumes of upstream Boulder Creek water.

Fathead minnows swim in two identical tanks inside, each 200 gallons. One fills with upstream creek water; the other with varying degrees of wastewater plant effluent. Such control lets researchers see how fish react to varying effluent concentrations.

They aimed to create a controlled experiment and confirm if estrogen and other compounds from the treatment plant were responsible for the fish sex change.

"The males were feminized in seven days," Norris said. "You don't need a Ph.D. to sex them."

The males have bumps on the forehead and often attack each other. The fish exposed to the effluent water lost their bumps and acted like girls. It confirmed effluent to be the culprit.

The Fish Exposure Mobile's ability to control effluent concentrations is providing new insights.

Diluting the treatment plant's effluent 50 percent feminized breeding male fish in a week to 15 days, Norris said. Some of the effects remained evident even when the wastewater plant effluent was diluted 75 percent.

"We were excited to get these results, but at the same time we're a little bit appalled at what we've seen," Norris said. Norris said CU and USGS researchers are converting a second trailer donated by the state health department. They hope to have it ready by next spring.

Fish Exposure Mobile II will travel to different sewage-treatment plants, starting in Vail and later in Grand Junction. The researchers suspect they will find similar chemistry in treatment-plant effluent elsewhere.

Sheila Murphy, a hydrologist with the U.S. Geological Survey in Boulder, said the Fish Exposure Mobile work has been important to counter skeptics who attribute transsexual fish in the Potomac River and other waterways to temperature changes or other environmental influences.

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"What it's showing is that it's indeed from the wastewater plant," Murphy said.

<http://www.dailycamera.com/news/2006/dec/10/fish-sex-change-investigatedx1/>



If Your Suntan Lotion Can Change The Sex Of Fish, What Can It Do To You?

The Stuff Is Not Only On Your Skin - It's In Your Tap Water and Lunches, Too

By Geoffrey Lean

The Independent
January 23, 2006

Spare a thought for the male hornyhead turbot. For despite its name, it is changing gender. And the sunscreens that symbolise bronzed sex appeal may be partly to blame.

Scientists have found that male hornyhead turbot and English sole, feeding near sewage outfalls on the Californian coast, are being feminised - and a chemical found in sunscreens is the likely culprit.

Meanwhile, Swiss researchers have found other suspected gender-bender chemicals from sun creams and oils building up in fish in their rivers.

Scientists at the University of California, Riverside, found that two-thirds of the male turbot and sole near a sewage outfall three miles off the surfers' paradise of Huntington Beach, near Los Angeles, were growing ovary tissue in their testes. A similar study by the Southern California Coastal Water Research Project found fish affected all along the coast. The American research is the first to find sex changes in fish in the open ocean.

Research on the feminising of fish in British rivers by the UK Environment Agency, exclusively reported in The Independent on Sunday, concluded in 2002 that oestrogen in urine from the contraceptive pill was to blame

But the University of California scientists found that the only culprit they could "exclusively identify" is oxybenzone, used to protect the skin from the ultraviolet component of sunlight.

Oxybenzone, which mimics oestrogen's chemical make-up, is washed off tanned bodies in the shower, passes through sewage works unchanged and settles on the seabed, where bottom-feeding fish eat it.

The scientists suspect the sunscreens are a contributory factor along with other pollutants, which they have yet to identify, such as DDT and PCBs. The new Swiss research, however, shows two other suspected gender-bender substances used in sunscreen and lip balm - octocrylene and 4-methylbenzylidene camphor - also building up alarmingly in fish.

They fear that people are being exposed to the chemicals several times over, first by putting them on their skin, and then ingesting them in drinking water and the fish they eat. But the cosmetics industry denies the chemicals are dangerous, and says that "sunscreen phobia" could lead to more cancers. For, unlike other cosmetics, sunscreens unquestionably save lives. About 100,000 new cases of skin cancer are diagnosed in Britain each year, of which 7,300 are particularly deadly melanomas that kill more than 1,600 people a year. Cancer Research UK fears melanoma numbers will treble over the next 30 years.

However, there have been other concerns about potential health effects. Some clear sunscreens use nanoparticles so small that they can penetrate the skin and even get into the brain.

There is also concern about a the universal use of sunscreens. By shielding ourselves from sunlight, we produce less vitamin D, which protects against as many as 16 different cancers.

<http://news.independent.co.uk/environment/article340237.ece>



Plastics Causing Gender Change-Extinctions Possible

By Mark Townsend

India's National Newspaper
The Hindu Online edition

October 3, 2004

Scientists now fear that seals, dolphins, otters, birds such as peregrine falcons and even honey bees are heading towards a unisex existence that would lead to extinction.

Mother Nature Is Taking Over

An extraordinary feminisation process has begun to affect Britain's wildlife - and scientists warn it could ultimately dismantle the evolutionary process that has existed for 3.5 billion years. A trend first noted in whelks is starting to spread rapidly among other wildlife species in the food chain.

The first national survey of 42 rivers by the UK Environment Agency has just been completed and it found that a third of male fish are growing female

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reproductive tissues and organs. Effects were most pronounced in younger fish, raising grave implications for future stocks.

More Species Effected

Scientists now fear that seals, dolphins, otters, birds such as peregrine falcons and even honey bees are heading towards a unisex existence that would lead to extinction.

Blame has fallen on the increasing prevalence of a group of chemicals known as endocrine disruptors. These are found in plastics, food packaging, shampoos and pesticides and accumulate in the environment.

They can mimic the female hormone oestrogen when ingested. A reduction in the size of male genitals, a lower sex drive and parts of the testes turning into ovary tissue are among the symptoms. As the effect of the chemicals starts to creep up the food chain, concern will mount over the potential effect on human health amid increasing evidence of falling sperm counts and infertility among men.

A Very Real Concern

Charles Tyler, professor of environmental and molecular fish biology at the University of Exeter in south-west England, who is leading an international team studying the impact of so-called 'gender-bending' chemicals, warns that a point where a species can no longer reproduce is a very real concern.

Others studying the phenomenon say the feminisation process is a warning from nature that a nightmare is about to unfold. Pressure will again resume soon on politicians to curb the use of 'gender-bending' chemicals.

Environmentalists will point to research revealing that honeybees, so vital for the pollination of plants, were found to display a lower sex drive with fewer eggs laid by the queen after exposure to endocrine disruptors.

They also point to recent studies involving bottlenose dolphins in the North Sea. Again, the presence of chemicals has been linked to an increase in birth defects, most notable among male specimens, along with more infant deaths, which has resulted in an ageing of the population. So far the U.K. government has agreed to fund studies into suspicions that the otter's comeback after decades of decline will be hampered by the feminising effects of the chemicals.

Ignorance Shows Up

A separate study has just been funded into the dipper, a bird, which feeds on invertebrates taken from the rivers. Tyler is among those who have complained that the huge gap in scientific knowledge over gender bending pollutants has so far prevented any action in the outlaw-

ing of chemicals.

Toxicology expert Andreas Kortenkamp of the University of London's school of pharmacy, believes the government has 'grossly underestimated' the chemicals' effects. He believes that current safeguards to protect wildlife are grossly inadequate. In particular, he warns that nothing is being done to calculate how cocktails of chemicals react in the environment. More than 100,000 synthetic chemicals remain authorised for use, with the European Union holding a list of 550 potential endocrine disruptors.

It is not yet known precisely which ones have altered the male reproductive organs of bream, carp, roach and gudgeon or caused hormone disruption among grey seal pups in the North Sea. Bees were found to be affected by chemicals used commonly on crops in the U.K. countryside.

The findings coincide with renewed concern over fertility levels among men. Sperm counts have fallen by a third between 1989 and 2002, according to some studies, while one in six British couples now experiences difficulty in conceiving.

Contaminated drinking water caused by the by-products of the contraceptive pill flowing back into the system is one of the explanations put forward.

Justin Woolford, a spokesman for the WWF (formerly the World Wide Fund for Nature), said: "What we do to wildlife we ultimately do to ourselves." Yet almost two years have passed since the WHO urged governments to investigate the effects of gender-bending chemicals.

http://www.blackherbals.com/plastics_causing_gender_change.htm



Pill-Popping Society Fouling Our Water, Official Says

March 24, 2006

CBC News / Canada

Birth control pills, cancer drugs and a host of other pharmaceuticals that people flush down the drain every day are showing up in our drinking water, says Gord Miller, Ontario's environmental commissioner.

"We need to do a better job of keeping drugs out of lakes, rivers and drinking water," Miller told the Kitchener-Waterloo Record on Wednesday.

Although the drugs are not considered a threat to human health, there is evidence that they can harm wildlife.

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"There is no health hazard in drinking water now that has been detected in Canada, but we have detected substances in drinking water," he said, adding that the problem is likely to get worse rather than better as the population grows.

"Our society loves to pop pills," Miller said. "If you were designing the perfect pollutant it would probably look like a pill."

Miller was sworn in as environmental commissioner six years ago to oversee the implementation of Ontario's Environmental Bill of Rights. He is an independent officer of Queen's Park, where he reports on government compliance with environmental rules.

In his last annual report, Miller said contraceptives, painkillers, antibiotics, anti-cancer drugs and blood-pressure drugs are showing up in lakes and rivers, while anti-inflammatory and anti-cholesterol drugs and antidepressants are ending up in drinking water.

Experiments in northern Ontario have shown that exposure to these waste drugs has led to the feminization of male fish, delayed reproduction in female fish and damage to kidneys and livers of both sexes, the report said.

Independent studies by the Environmental Protection Agency in the United States and by environmental bodies in England have turned up similar evidence.

Miller said pharmaceuticals are getting into drinking water in several ways. Unused drugs are thrown into domestic garbage, which end up in landfill sites and eventually into the groundwater.

Drugs are taken orally and flushed down toilets as human excrement. And unused drugs are washed down the sink or flushed down the toilet directly into domestic sewers.

Many drugs pass right through the sewage and water treatment plants, back into the drinking water.

"Sewage treatment plants aren't designed to remove them," Miller said.

<http://www.commondreams.org/cgi-bin/print.cgi?file=/headlines06/0324-01.htm>



Top 11 Compounds in US Drinking Water

by Rowan Hooper

12 January 2009

A comprehensive survey of the drinking water for more than 28 million Americans has detected the widespread but low-level presence of pharmaceuticals and hormonally active chemicals.

Little was known about people's exposure to such compounds from drinking water, so Shane Snyder and colleagues at the Southern Nevada Water Authority in Las Vegas screened tap water from 19 US water utilities for 51 different compounds. The surveys were carried out between 2006 and 2007.

The 11 most frequently detected compounds - all found at extremely low concentrations - were:

- Atenolol, a beta-blocker used to treat cardiovascular disease
- Atrazine, an organic herbicide banned in the European Union, but still used in the US, which has been implicated in the decline of fish stocks and in changes in animal behaviour
- Carbamazepine, a mood-stabilising drug used to treat bipolar disorder, amongst other things
- Estrone, an oestrogen hormone secreted by the ovaries and blamed for causing gender-bending changes in fish
- Gemfibrozil, an anti-cholesterol drug
- Meprobamate, a tranquiliser widely used in psychiatric treatment
- Naproxen, a painkiller and anti-inflammatory linked to increases in asthma incidence
- Phenytoin, an anticonvulsant that has been used to treat epilepsy
- Sulfamethoxazole, an antibiotic used against the Streptococcus bacteria, which is responsible for tonsillitis and other diseases
- TCEP, a reducing agent used in molecular biology
- Trimethoprim, another antibiotic

The concentrations of pharmaceuticals in drinking water were millions of times lower than in a medical dose, and Snyder emphasises that they pose no public health threat. He cautions, though, that "if a person has a unique health condition, or is concerned about particular contaminants in public water systems, I strongly recommend they consult their physician".

Christian Daughton of the EPA's National Exposure Research Laboratory says that neither this nor other recent water assessments give cause for health concern. "But several point to the potential for risk - especially

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for the fetus and those with severely compromised health."

Daughton says the contamination surveys help people realise how they are intimately and inseparably connected with their environment. "The occurrence of pharmaceuticals in the environment also serves to make us acutely aware of the chemical sea that surrounds us," he says.

Modern life

While the US government regulates the levels of pathogens in US drinking water, there are no rules for pharmaceuticals and other compounds, apart from one: the herbicide atrazine. The atrazine levels measured by Snyder and colleagues were well within federal limits.

Snyder says water utilities could make drinking water purer. But the costs of "extreme purification" - far beyond what is needed for safety alone - are huge in terms of increased energy usage and carbon footprint. Ultra-pure water might not even be safe, adds Snyder.

The widespread occurrence of pharmaceuticals and endocrine disruptors reflects improved detection techniques, rather than greater pollution, says Snyder. Contamination is a fact of modern life, he adds.

"As we continue to populate and aggregate, our wastes will certainly accumulate where we live," he says. "We as a species have decided to live a modern life, with pharmaceuticals, plastics, transportation - therefore we must accept that there will be a certain degree of contamination."

<http://www.newscientist.com/article/dn16397-top-11-compounds-in-us-drinking-water.html>



'Toxic stew' of Chemicals causing Male Fish to carry Eggs in Testes

Intersex fish, found across the US, result from a mix of drugs that mimic natural hormones, say scientists

Suzanne Goldenberg

Guardian.co.uk
21 April 2010

More than 80% of the male bass fish in Washington's major river are now exhibiting female traits such as egg production because of a "toxic stew" of pollutants, scientists and campaigners reported yesterday.

Intersex fish probably result from drugs, such as the contraceptive pill, and other chemicals being flushed into the water and have been found right across the US.

The Potomac Conservancy, which focuses on Washington DC's river, called for new research to determine what was causing male smallmouth bass to carry immature eggs in their testes. "We have not been able to identify one particular chemical or one particular source," said Vicki Blazer, a fish biologist with the US geological survey. "We are still trying to get a handle on what chemicals are important."

But she said early evidence pointed to a mix of chemicals – commonly used at home as well as those used in large-scale farming operations – causing the deformities. The suspect chemicals mimic natural hormones and disrupt the endocrine system, with young fish being particularly susceptible.

The chemicals could include birth control pills and other drugs, toiletries especially those with fragrances, products such as tissues treated with antibacterial agents, or goods treated with flame retardants that find their way into waste water. However, Blazer also pointed to runoff from fertilisers and pesticides from agricultural areas.

About 5 million people live in the greater Washington area, and 90% of them get their drinking water from the Potomac. There is evidence that the anomaly is not confined to the Potomac, one of the largest rivers on America's Atlantic coast.

A report last year by the US geological survey found intersex fish in a third of 111 sites tested around the country. Of the 16 fish species studied, the condition was most common in smallmouth and largemouth bass and among males, although researchers also discovered the occasional female fish with male characteristics. The researchers studied sites along some of America's greatest rivers from the Mississippi to the Rio Grande.

"We need to get these toxins out of our river water," said Hedrick Belin, the president of the Potomac Conservancy. The campaign group called for \$3m (£1.9m) in research over three years on endocrine disruptors on their effects on fish. It also called on the authorities to involve pharmaceutical companies in the safe disposal of drugs, and to invest in technology that can filter out endocrine disrupting compounds.

<http://www.guardian.co.uk/environment/2010/apr/21/toxic-stew-chemicals-fish-eggs>



WE CAN MAKE YOU HEALTHY AND WISE

Bolivia's Morales: Eating Chicken Makes You Gay?

By Jean Friedman-Rudovsky / Cochabamba

April 23, 2010

When Bolivian President Evo Morales took the stage to inaugurate the World People's Summit on Climate Change and the Rights of Mother Earth on Tuesday, April 20, in Cochabamba, he gave his thousands of politically correct attendees a surprise. Somewhere between appealing for an international climate-change court and questioning why the U.N. still uses plastic cups, Morales went after genetically modified foods — by making a comment that some think meant that hormones cause homosexuality.

"When we talk about chicken, it's pumped full of female hormones," Morales said, "and so when men eat this chicken, they stray from being men" (literally *tienen desviaciones en su ser como hombres* in Spanish). The comment went over non-Spanish speakers' heads, so it wasn't until sundown that it rippled its way through the 35,000-participant gathering. By the next morning, the international press had gotten wind of it, Bolivian newspapers had plastered it on their front pages and Spain's national LGBT federation had issued a statement calling the comment "homophobic."

The Morales government swears he meant no harm. "He made no mention of sexuality," the Foreign Relations Ministry said on Thursday, April 22, in response. "Rather, he said that eating chicken that has hormones changes our own bodies. This point of view has been confirmed by scientists, and even the European Union has prohibited the use of some hormones in food," the government asserts, citing studies that have shown that sexual hormones in food can cause genital abnormalities in boys. The document has not assuaged all critics — especially since the Latin left, which Morales represents, has historically been considered less than sympathetic to homosexuals — but it has taken some of the heat off Morales.

Bolivia's President also called Coca-Cola the poor man's Drano. "If the plumber comes to your house and can't get the job done with all his tools," Morales quipped, "have him pour Coca-Cola down the clogged toilet, and problem solved." This jab was better received, since Bolivians think the beverage company unfairly benefits from the country's traditional coca leaf. The leaf, an integral part of Bolivian indigenous culture as well as the base ingredient for cocaine, is banned outside the Andes. Bolivia therefore can't export its popular tea, for example. However, the U.N. Convention on Narcotics offers an

exception when the leaf is used as a "flavoring agent." The Coca-Cola company refuses to disclose any part of its secret formula, but reporting suggests the coca leaf is in the recipe. Morales may have timed this remark on purpose: just last week, a small company in Bolivia introduced "Coca-Colla" into the local market (Colla referring to the native Andean highland people), a new energy soda that proudly uses coca as a main ingredient.

Though the off-color remarks took center stage in the press, summit participants chalked them up to quirky humor and kept focus on what few consider a laughing matter — the growing climate crisis. Morales called for this "people's" summit back in January after what he and many in the global south saw as unwillingness on the part of developed-world leaders to set out a sustainable path in Copenhagen. Workshops and panels in Cochabamba echoed with harsh criticism of the Copenhagen Accord's back-door birth and complaints that it falls short of what's needed to curb climate problems.

"There is a cruel irony to climate change," Naomi Klein, author of the international bestsellers *No Logo* and *The Shock Doctrine* and a participant in the People's Summit, tells *TIME*. "The poorest nations that did not create the problem are the ones who are feeling its effects most," she says, explaining that experts are predicting that the developing world is going to suffer 75% of the effects of climate change.

Bolivia is an example of this irony. The Andean nation's millenniums-old glaciers are melting down to bare rock because of global warming that the country's 9 million residents did little to create. Scientists in Bolivia say its ice masses have lost 50% of their volume in the past 40 years alone. But this goes beyond mourning the slow death of great natural beauty. These glaciers provide 20% of the drinking water for two of Bolivia's largest cities, La Paz and El Alto, as well the surrounding countryside, which combined make up almost a quarter of the country's population.

Moreover, this may be a warning for everyone, says Dirk Hoffman, head of the climate-change program at Bolivia's largest university, *Universidad Mayor de San Andrés*. He considers the glaciers a kind of environmental miner's canary: "They are extremely sensitive, and so when they show their distress by melting, they are telling us that the rest of the planet is in great danger."

Since Bolivia is suffering the consequences of a sequence of conditions it did not cause, there's a debt to be paid, say some activists. For this nation, that could

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mean funding projects like the construction of reservoirs. But, the idea goes, climate reparations are about more than just aid. They're about industrialized countries accepting responsibility by taking actions within their borders to curb the problems — for example, pursuing 40% emissions reductions from 1990 levels to 2020 rather than the 13% to 19% promised in Copenhagen. This debt idea has been met with harsh resistance. Todd Stern, the top U.S. climate negotiator in Copenhagen, says reparations on the scale that activists advocate — a cool \$400 billion — is "wildly unrealistic."

Back on Tuesday's inaugural stage, speakers understood their uphill battle. As the smoke from the ceremonial coca-leaf offering floated into the late-morning air, representatives from Brazil, Nigeria and India said it was time the world chose between survival and destruction. Attendees at the vast gathering showed tenacity despite the challenges. As Alaska Inter-Tribal Council member Faith Gemmil noted in her welcoming address, "Our people have faced destructive policies for centuries. And we are still here."

<http://www.time.com/time/world/article/0,8599,1984064,00.html>



Now I'm a chick! Gianni the Gender-bending Cockerill starts to lay eggs, baffling Scientists

21st April 2010



All change: Gianni the former rooster has taken to laying eggs and trying to hatch them

Gianni started life as a red-blooded cockerel and would often wake his Italian owners up crowing on his farm in Tuscany.

But when a fox raided Gianni's enclosure and killed all of the hens inside, Gianni felt it was time for a change.

Within days the bird was laying eggs and trying to hatch them as he began his new life as a hen.

The sex-change chicken has baffled scientists at the UN's Farm and Agriculture Organisation, who are now planning to study Gianni's DNA to see what made him change.

An expert at the centre said: 'It may be a primitive species survival gene. With all the females gone he could only ensure the future of his line by becoming female.'

Professor Donato Matassino, who will be leading tests on Gianni, said: 'This rooster-hen will be taken to the laboratories of Consdabi for a series of behavioural and genetic tests.'

'This will allow us to decipher this bizarre DNA mix up that appears to have literally given what looks like two chickens in one.'

Professor Donato said the cockerel-hen was transported by train to Naples where the laboratories are based.

<http://www.dailymail.co.uk/news/worldnews/article-1267691/Gianni-gender-bending-rooster-starts-lay-eggs.html>



Endocrine Disrupting Chemicals and Diabetes: Insights from Experimental Toxicological Studies

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EMERGING ASPECTS

Endocrine Disrupting Chemicals (EDCs) have been given big attention from scientific community because of their involvement in female and male infertility and related diseases. However an increasing number of data suggest how some EDCs may have a role also in the so-called "metabolic syndrome" and, in particular, in type 2 diabetes. In such field, experimental toxicological studies may supply a remarkable contribution, by either supporting the biological plausibility of epidemiological hypotheses or identifying new EDCs potentially involved.

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FEATURED ARTICLES

Endocrine Disrupters

By Carol Bogart

Stolen Future?

Everything from obesity to prostate cancer. That's what researchers say could be triggered by prenatal exposure to an array of chemicals suspected to be endocrine disrupters.

According to a report on the emerging science of endocrine disruption presented to the International Seminar on Nuclear War and Planetary Emergencies in Italy in 2003, chemical "signaling" determines biological development and regulates cell and organ activity in all living things. Results of research strongly suggest that many environmental contaminants interfere with this process.

Endocrine disrupting chemicals (EDCs) are defined as chemicals that can disrupt thyroid hormones and other endocrine processes. For example, the report states that lifetime exposure to estrogen is the best predictor of breast cancer, and "exposure to EDCs that are environmental estrogens could plausibly increase breast cancer risk." This cause and effect has been confirmed in laboratory rats. The Natural Resources Defense Council (www.nrdc.org) says estrogen is a hormone secreted primarily by the ovaries. It controls the menstrual cycle, fertility, and maintenance of a healthy pregnancy, among other critical activities in adults. In the fetus, estrogen is essential for normal development of both males and females.

Other illnesses and disorders suspected of being linked to exposures in the womb to EDCs include heart disease, decreased fertility, preterm birth, autism and impaired immune systems.

In the developing fetus, the report states that EDCs can act at very low levels of exposure to produce profound effects - as early as the moment of conception, on through various stages of maturity, adulthood and death. Insulin resistance and diabetes are believed to be linked to exposure to EDCs, as are neurological problems such as Attention Deficit Hyperactivity Disorder. According to the report, "the disruptive effects of developmental expo-

sure are permanent and irreversible." Adult exposures, it says, result in measurable but reversible effects.

More and exhaustive research is needed, the report says, to confirm the link between environmental exposure to EDCs and, for example, obesity - but the "underlying biology (of such conditions) suggests that alterations in inter- and intra-cellular signaling processes" from exposure to EDCs "may be causally involved."

Among the chemicals thought to trigger such harmful effects are those in polycarbonate plastics, used to make drink containers, and for resin to line food cans. More than 100-billion such liners are manufactured each year in the U.S. alone. Researchers say the potential endocrine disrupter Bisphenol A can leach from the containers, be ingested by pregnant women and passed on to the fetus.

In addition, the report states, endocrine disrupters are literally being carried with the wind. The report states that large masses of air have been tracked across the Pacific carrying a variety of pollutants from central Asia to the West Coast of the United States, largely undiluted.

More than 80,000 chemicals are registered for commercial use, the report states, adding that few have been tested for endocrine disrupting effects, "particularly," it adds, "during embryonic development, the most vulnerable time in life." The Food and Drug Administration (www.fda.gov), calls research utilizing animals "slow and expensive," and says there is a crucial need to prioritize which of the 87,000 chemicals should be tested first, beginning with those "most likely to possess endocrine disrupting activity."

Researchers say suspected endocrine disrupters can be found in:

- Metals
- Personal care products

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- Pesticides/herbicides/fungicides
- Industrial chemicals
- Pharmaceutical drugs
- Synthetic and naturally occurring hormones.

Just how great an impact exposure to an EDC will have will vary, say scientists, depending not only on when in the life cycle the exposure occurs, but the amount of exposure and duration. New data suggest disruption can occur with even low dose exposure to heavy metals such as arsenic. Arsenic can leach into drinking water from improperly abandoned landfills, and even old cemeteries.

According to the National Park Service (www.crm.cr.nps.gov), arsenic was the main ingredient in embalming fluids from the Civil War until 1910. Leaching from old cemeteries is a confirmed threat to groundwater.

In 1996, the federal Food Quality Protection Act required a screening and testing program for endocrine disrupters. That year, the Office of Research and Development at the Environmental Protection Agency (www.epa.gov) identified endocrine disruption as one of its top six research priorities.

EPA information offers the following answers to questions about EDCs:

1. What is the endocrine system?

The endocrine system is a complex network of glands and hormones that regulates many of the body's functions; including growth, development and maturation, as well as the way various organs operate. The endocrine glands -- including the pituitary, thyroid, adrenal, thymus, pancreas, ovaries, and testes -- release carefully-measured amounts of hormones into the bloodstream that act as natural chemical messengers, traveling to different parts of the body in order to control and adjust many life functions.

2. What is an endocrine disrupter?

An endocrine disrupter is a synthetic chemical that when absorbed into the body either mimics or blocks hormones and disrupts the body's normal functions. This disruption can happen through altering normal hormone levels, halting or stimulating the production of hormones, or changing the way hormones travel through the body, thus affecting the functions that these hormones control. Chemicals that are known human endocrine disrupters include diethylstilbesterol (the drug DES), dioxin, PCBs, DDT, and some other pesticides. Many chemicals, particularly pesticides and plasticizers, are suspected endocrine disrupters based on limited animal studies.

3. What are some likely routes of exposure to endocrine disrupters?

Exposure to endocrine disrupters can occur through direct contact with pesticides and other chemicals or through ingestion of contaminated water, food, or air. Chemicals suspected of acting as endocrine disrupters are found in insecticides, herbicides, fumigants and fungicides that are used in agriculture as well as in the home. Industrial workers can be exposed to chemicals such as detergents, resins, and plasticizers with endocrine disrupting properties. Endocrine disrupters enter the air or water as a byproduct of many chemical and manufacturing processes and when plastics and other materials are burned. Further, studies have found that endocrine disrupters can leach out of plastics, including the type of plastic used to make hospital intravenous bags. Many endocrine disrupters are persistent in the environment and accumulate in fat, so the greatest exposures come from eating fatty foods and fish from contaminated water.

4. How do we know that endocrine disrupters are dangerous?

Many plant and animal species are showing signs of ill health due to exposure to endocrine disrupting chemicals. For example, fish in the Great Lakes, which are contaminated with polychlorinated biphenyls (PCBs) and other man-made chemicals, have numerous reproductive problems as well as abnormal swelling of the thyroid glands. Fish-eating birds in the Great Lakes area, such as eagles, terns, and gulls, have shown similar dysfunctions.

Scientists have also pointed to endocrine disrupters as the cause of a declining alligator population in Lake Apopka, Florida. The alligators in this area have diminished reproductive organs that prevent successful reproduction. These problems were connected to a large pesticide spill several years earlier, and the alligators were found to have endocrine disrupting chemicals in their bodies and eggs.

5. Should humans be concerned for their health based on evidence that fish, birds and alligators have been affected?

Yes. All vertebrates (fish, amphibians, reptiles, birds, and mammals, including humans) are fundamentally similar during early embryonic development. Scientists can therefore use the evidence acquired on other species to make predictions about endocrine disrupting effects on humans.

6. Is there direct evidence that humans are susceptible to endocrine disruption?

Yes. In the 1950s and 1960s pregnant women were prescribed diethylstilbestrol (DES), a synthetic estrogen, to prevent miscarriages. Not only did DES fail to prevent miscarriages, but it also caused health problems for many

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of these women's children. In 1971, doctors began reporting high rates of unusual vaginal cancers in teenage girls. Investigations of the girls' environmental exposures traced the problem to their mothers' use of DES. The girls also suffered birth defects of the uterus and ovaries, and immune system suppression.

7. Are children at greater risk from endocrine disrupter exposure?

Yes. Because endocrine disrupters affect the development of the body's vital organs and hormonal systems, infants, children and developing fetuses are more vulnerable to exposure. And as was the case with DES, parents' exposure to certain chemicals may produce unexpected -- and tragic -- effects in their children, even decades later.

8. These days don't chemicals have to be safe to be allowed on the market?

No. The majority of the more than 2,000 chemicals that come onto the market every year do not go through even the simplest tests to determine toxicity. Even when some tests are carried out, they do not assess whether or not a chemical has endocrine interfering properties.

9. What can I do to reduce my risk of exposure?

- Educate yourself about endocrine disrupters, and educate your family and friends.
- Buy organic food whenever possible.
- Avoid using pesticides in your home or yard, or on your pet -- use baits or traps instead, keeping your home especially clean to prevent ant or roach infestations.
- Find out if pesticides are used in your child's school or day care center and campaign for non-toxic alternatives.
- Avoid fatty foods such as cheese and meat whenever possible. EDCs are not flushed from an animal's body. Instead, they are stored and accumulate in fat, which then makes its way up the food chain, to be stored in the fat of humans.
- If you eat fish from lakes, rivers, or bays, check with your state to see if they are contaminated.
- Avoid heating food in plastic containers, or storing fatty foods in plastic containers or plastic wrap.
- Do not give young children soft plastic teething toys, since these leach potential endocrine disrupting chemicals.

According to the NRDC, the National Center for Environmental Health at the Centers for Disease Control and Prevention has developed analytic techniques which

allow measurements of human exposures to many known and suspected endocrine disrupting chemicals. These measurements, usually done on blood samples, are expensive and not available except for specific research projects. NRDC says it is working to increase funding for this testing so that in the future, people may be able to go to their doctor to find out their exposure levels to some of these chemicals, which could result in better research studies.

In the meantime, the NRDC advocates the "Precautionary Principle" with regard to public health. Instead of waiting for proof that chemicals are hazardous, the council believes exposures should be minimized or eliminated until it's determined they do not hurt human health. The burden of "proof," the NRDC believes, should fall not on the public and on government, but on industry. The NRDC states: "Because we do not perform direct studies on human subjects, it is extremely difficult to produce 'proof' of human harm. Until we shift the burden of proof from organizations and communities (responsible for proving harm) to industries (responsible for proving harmless), unnecessary exposures to unsafe chemical substances will continue to prevail." It should be noted that such safeguards would likely result in higher food prices.

http://hubpages.com/hub/Endocrine_Disrupters



Arsenic: A New Type of Endocrine Disrupter?

ScienceDaily (Mar. 2, 2001) — Hanover, NH — A team of Dartmouth Medical School investigators has uncovered what may be a unique mechanism for the way chronic exposure to low levels of arsenic increases the risk of certain diseases. The work is described in the March issue of the journal *Environmental Health Perspectives*.

Arsenic at high doses has been known as the poison of choice since ancient times. Recently, it has become clear that decades of exposure to very low doses of arsenic — such as levels found in drinking water in many areas of the United States — may substantially increase the risk of vascular disease, diabetes and several types of cancer. Until now, little was known about how arsenic might contribute to these diseases, however.

Using cultured animal cells, a team led by toxicologist Joshua Hamilton, director of Dartmouth's Toxic Metals Research Program, found that exposure to very low concentrations of arsenic disrupts the function of the glucocorticoid receptor, a steroid hormone receptor that regulates a wide range of biological processes. Arsenic

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Considerable interest was awakened by the possible association between high exposure to inorganic arsenic (As) and type 2 diabetes [1]. Experimental studies showed that As is able to inhibit insulin production and secretion, thus reducing glucose tolerance; As can also modulate the activity of glucocorticoid nuclear receptor, showing a stimulatory action at low dose and an inhibiting one at high dose [2]. Inorganic As could be an EDC of particular concern since it's capable to modify the reciprocal interaction ("cross-talk") between nuclear receptors [3].

Another metal of potential concern is trivalent chromium (CrIII); contrary to hexavalent chromium, known to be a carcinogenic contaminant, CrIII is an essential trace element, with a specific role in glucose metabolism regulation [4,5]. Nevertheless experimental studies indicate possible adverse metabolic-endocrine effects at high dosage: high exposure to CrIII might occur either for excessive usage of supplements or for intake of animal products containing CrIII residues from feed additives currently not authorized in Europe. Bisphenol A, an estrogenic EDC, causes hyperinsulinemia and interferes with pancreatic beta-cell activity in the rat, although further data are needed to study this possible association [6]. Organophosphate insecticides like diazinon and chlorpyrifos, still not included between EDCs, cause hyperinsulinemia and enhanced response to gluconeogenic stimuli in vivo [7]. Moreover, the toxicity of these compounds is increased in rodents with pharmacologically induced diabetes [8].

Exposure of general population to Dioxin and dioxin-like PCBs, which are widespread persistent pollutants, takes place mostly through foods containing high percentage of lipids (some kinds of fish, fatty meat, dairy products).

Whereas an association with type 2 diabetes is suggested by epidemiological studies, it has been not thoroughly investigated by experimental studies. However several data suggest that such compounds interact with nutritional status markers associated with diabetes, such as serum triglycerides and oxidative stress markers [9,10] (EDID EDC-Diet Interactions Database, <http://www.iss.it/inte/edid/cont.php?id=110&lang=2&tipo=17>). The possible role of EDCs in type 1 diabetes has awaken, so far, little attention. However experimental data show that nuclear receptors which are EDCs targets, (such as PPAR-gamma, target for phthalates) [11] phthalates' molecular target. Consequently further studies should be promoted.

In conclusion, available experimental studies, still not sufficient for risk evaluation, point out how EDCs expo-

sure should be better investigated also through epidemiological studies as a risk factor for diabetes.

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Gender-bending Chemicals 'Triggering early Puberty in Girls and putting them at risk of Diabetes and Cancer'

Everyday 'gender-bending' chemicals may be triggering early puberty in girls

By David Derbyshire

07th April 2010

Gender-bending chemicals used in food cans, shower curtains and toys may be triggering early puberty in girls - and putting them at greater risk of cancer and diabetes, researchers say.

A study has found evidence that three classes of hormone-mimicking chemicals disrupt the bodies of girls approaching adolescence.

Although the association is 'weak', the scientists say it raises serious questions about the causes of early puberty.

The average age of puberty in girls - ten years and three months - has fallen by more than a year in a single generation.

Doctors say improved diet and higher body weights of children are mostly to blame.

But some researchers believe environmental chemicals that mimic the sex hormone oestrogen could also be a factor.

The latest study found that exposure to three chemical classes - phthalates, phenols and phytoestrogens - can 'disrupt the timing of pubertal development' in young girls.

Phthalates are banned in cosmetics in Europe, but are allowed in the U.S.

Phenols include the widely used chemical Bisphenol A - which is used in the lining of food cans and shatter-proof baby bottles. Phytoestrogens are naturally occurring chemicals found in soya, bread, cereals and nuts.

In tests, girls with the highest concentrations of some of the substances in their bodies tended to develop breasts and pubic hair earlier than those with the lowest levels.

Other chemicals appeared to delay puberty.

'Research has shown that early pubertal development in girls can have adverse social and medical effects, including cancer and diabetes later in life,' said Dr Mary Wolff, of Mount Sinai School of Medicine in New York.

'Our research shows a connection between chemicals that

girls are exposed to on a daily basis and either delayed or early development. While more research is needed, these data are an important first step in evaluating the impact of these common environmental agents in putting girls at risk.'

The findings come from a study of 1,151 American girls. The girls were aged between six and eight at the start of the study and were monitored for up to two years.

The scientists-found that all three chemicals were widely detectable in the girls' urine samples.

High exposure to some of the hormone-mimicking chemicals was 'weakly associated' with early signs of puberty. Exposure to others appeared to delay puberty.

The strongest links were seen with phthalates and phytoestrogens.

'We believe that there are certain periods of vulnerability in the development of the mammary gland, and exposure to these chemicals may influence breast cancer risk in adulthood,' Dr Wolff said.

Around a third of the girls in the study were showing signs of early puberty.

Hormone-disrupting chemicals can interfere with the body by mimicking oestrogen - or by blocking it. Their impact depends on the dose and their location in the body.

British puberty expert Professor Fran Ebling, of Nottingham University, said: 'Most of the associations in this study were weak and we know that weight is a much better predictor of early puberty. But this is a very well-designed study.

'There really is evidence that the average age girls are starting to develop breasts and pubic hair is getting lower so there's a lot of controversy as to why this is.

'Most of the evidence points at body, but there's a faint suspicion that environmental chemicals could be playing a role too.'

<http://www.dailymail.co.uk/health/article-1264019/Gender-bending-chemicals-triggering-early-puberty-girls-putting-risk-diabetes-cancer.html>

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Blackherbals at the Source of the Nile UG LTD

Continued from page 29 – Arsenic: A New Type of Endocrine Disrupter?

appears to suppress the ability of this critical receptor to respond to its normal hormone signal. Chemicals that disrupt steroid hormone receptor signaling are called endocrine disrupters. Arsenic, a metal, appears to act through a unique mechanism not previously shown for other endocrine disrupters such as pesticides.

"This is unlikely to be the only mechanism underlying diseases associated with low-level arsenic exposure, but we suspect it will be an important contributor," says Hamilton. The research was performed in Hamilton's laboratory in the Department of Pharmacology and Toxicology by former graduate student Ronald Kaltreider (now an assistant professor at York College in York Pa.) with the assistance of undergraduate student Alisa Davis and Research Assistant Jean Lariviere. The Toxic Metals group is one of the interdisciplinary research projects associated with the Center for Environmental Health Sciences at Dartmouth, which Hamilton also directs. The work is funded by a grant from the National Institute of Environmental Health Sciences and the Environmental Protection Agency through the Superfund Basic Research Program.

Glucocorticoids are steroid hormones in the same class as estrogen, progesterone and testosterone. Steroid hormones are chemical messengers secreted by glands into the bloodstream and carried to distant cells throughout the body where they help regulate the body's functions. Each hormone has a specific receptor it binds to in order to initiate its effects. Glucocorticoids, acting through their receptor, help regulate embryo development, stress, blood glucose levels, blood vessel function, and lung and skin development, and may also play a key role in suppressing cancer.

Prior to this study, endocrine disrupting chemicals were thought to act primarily in one of two ways. One way is by binding to a steroid receptor and mimicking the normal hormone, leading to an inappropriate activation of the receptor. The other way is by binding to the receptor and blocking the ability of the normal hormone to activate the receptor. Arsenic appears to act in a third way. Kaltreider's research demonstrated that arsenic does not inappropriately activate the glucocorticoid receptor, nor does it block its ability to bind hormone or be activated by hormone binding.

Rather, in the presence of arsenic, the activated receptor is unable to stimulate the correct cascade of signals that usually results from hormone binding, particularly the ability to turn on certain hormone-responsive genes. Metals have not previously been shown to act as endocrine disrupters. Blocking the actions of the gluco-

corticoid receptor by arsenic in this unique way could explain, at least in part, many of the health effects observed in arsenic-exposed human populations.

Whether the effects observed in cultured cells also occur in animals or humans exposed to low doses of arsenic remains to be determined, and Hamilton's laboratory is actively pursuing that research. The researchers are also examining whether arsenic has a similar effect on the estrogen, progesterone and testosterone receptors, which could have further implications for arsenic's effects on human health.

<http://www.sciencedaily.com/releases/2001/03/010301072022.htm>



GM Soy Linked To Sterility, Infant Mortality

By Jeffrey Smith

April 26, 2010

"This study was just routine," said Russian biologist Alexey V. Surov, in what could end up as the understatement of this century. Surov and his colleagues set out to discover if Monsanto's genetically modified (GM) soy, grown on 91% of US soybean fields, leads to problems in growth or reproduction.

What he discovered may uproot a multi-billion dollar industry. After feeding hamsters for two years over three generations, those on the GM diet, and especially the group on the maximum GM soy diet, showed devastating results. By the third generation, most GM soy-fed hamsters lost the ability to have babies. They also suffered slower growth, and a high mortality rate among the pups.

And if this isn't shocking enough, some in the third generation even had hair growing inside their mouths - a phenomenon rarely seen, but apparently more prevalent among hamsters eating GM soy.

The study, jointly conducted by Surov's Institute of Ecology and Evolution of the Russian Academy of Sciences and the National Association for Gene Security, is expected to be published in three months (July 2010) --so the technical details will have to wait. But Surov sketched out the basic set up for me in an email.

He used Campbell hamsters, with a fast reproduction rate, divided into 4 groups. All were fed a normal diet, but one was without any soy, another had non-GM soy, a third used GM soy, and a fourth contained higher amounts of GM soy. They used 5 pairs of hamsters per

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group, each of which produced 7-8 litters, totally 140 animals.

"Originally, everything went smoothly. However, we noticed quite a serious effect when we selected new pairs from their cubs and continued to feed them as before. These pairs' growth rate was slower and reached their sexual maturity slowly."

He selected new pairs from each group, which generated another 39 litters. There were 52 pups born to the control group and 78 to the non-GM soy group. In the GM soy group, however, only 40 pups were born. And of these, 25% died. This was a fivefold higher death rate than the 5% seen among the controls. Of the hamsters that ate high GM soy content, only a single female hamster gave birth. She had 16 pups; about 20% died.

Surov said "The low numbers in F2 [third generation] showed that many animals were sterile."

The published paper will also include measurements of organ size for the third generation animals, including testes, spleen, uterus, etc. And if the team can raise sufficient funds, they will also analyze hormone levels in collected blood samples.

Hair Growing in the Mouth

Earlier this year, Surov co-authored a paper in Doklady Biological Sciences showing that in rare instances, hair grows inside recessed pouches in the mouths of hamsters.

"Some of these pouches contained single hairs; others, thick bundles of colorless or pigmented hairs reaching as high as the chewing surface of the teeth. Sometimes, the tooth row was surrounded with a regular brush of hair bundles on both sides. The hairs grew vertically and had sharp ends, often covered with lumps of a mucous."

At the conclusion of the study, the authors surmise that such an astounding defect may be due to the diet of hamsters raised in the laboratory. They write, "This pathology may be exacerbated by elements of the food that are absent in natural food, such as genetically modified (GM) ingredients (GM soybean or maize meal) or contaminants (pesticides, mycotoxins, heavy metals, etc.)." Indeed, the number of hairy mouthed hamsters was much higher among the third generation of GM soy fed animals than anywhere Surov had seen before.

Preliminary, but Ominous

Surov warns against jumping to early conclusions. He said, "It is quite possible that the GMO does not cause these effects by itself." Surov wants to make the analysis of the feed components a priority, to discover just what is causing the effect and how.

In addition to the GMOs, it could be contaminants, he said, or higher herbicide residues, such as Roundup.

There is in fact much higher levels of Roundup on these beans; they're called "Roundup Ready." Bacterial genes are forced into their DNA so that the plants can tolerate Monsanto's Roundup herbicide. Therefore, GM soy always carries the double threat of higher herbicide content, couple with any side effects of genetic engineering.

Years of Reproductive Disorders from GMO-Feed

Surov's hamsters are just the latest animals to suffer from reproductive disorders after consuming GMOs. In 2005, Irina Ermakova, also with the Russian National Academy of Sciences, reported that more than half the babies from mother rats fed GM soy died within three weeks. This was also five times higher than the 10% death rate of the non-GMO soy group. The babies in the GM group were also smaller and could not reproduce.

In a telling coincidence, after Ermakova's feeding trials, her laboratory started feeding all the rats in the facility commercial rat chow using GM soy. Within two months, the infant mortality facility-wide reached 55%. When Ermakova fed male rats GM soy, their testicles changed from the normal pink to dark blue! Italian scientists similarly found changes in mice testes, including damaged young sperm cells. Furthermore, the DNA of embryos from parent mice fed GM soy functioned differently.

An Austrian government study published in November 2008 showed that the more GM corn was fed to mice, the fewer the babies they had (PDF), and the smaller the babies were.

Central Iowa Farmer Jerry Rosman also had trouble with pigs and cows becoming sterile. Some of his pigs even had false pregnancies or gave birth to bags of water. After months of investigations and testing, he finally traced the problem to GM corn feed. Every time a newspaper, magazine, or TV show reported Jerry's problems, he would receive calls from more farmers complaining of livestock sterility on their farm, linked to GM corn.

Researchers at Baylor College of Medicine accidentally discovered that rats raised on corncob bedding "neither breed nor exhibit reproductive behavior." Tests on the corn material revealed two compounds that stopped the sexual cycle in females "at concentrations approximately two-hundredfold lower than classical phytoestrogens."

One compound also curtailed male sexual behavior and both substances contributed to the growth of breast and prostate cancer cell cultures. Researchers found that the

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the amount of the substances varied with GM corn varieties. The crushed corncob used at Baylor was likely shipped from central Iowa, near the farm of Jerry Rosman and others complaining of sterile livestock.

In Haryana, India, a team of investigating veterinarians report that buffalo consuming GM cottonseed suffer from infertility, as well as frequent abortions, premature deliveries, and prolapsed uteruses. Many adult and young buffalo have also died mysteriously.

Denial, Attack and Canceled Follow-up

Scientists who discover adverse findings from GMOs are regularly attacked, ridiculed, denied funding, and even fired. When Ermakova reported the high infant mortality among GM soy fed offspring, for example, she appealed to the scientific community to repeat and verify her preliminary results. She also sought additional funds to analyze preserved organs. Instead, she was attacked and vilified. Samples were stolen from her lab, papers were burnt on her desk, and she said that her boss, under pressure from his boss, told her to stop doing any more GMO research. No one has yet repeated Ermakova's simple, inexpensive studies.

In an attempt to offer her sympathy, one of her colleagues suggested that maybe the GM soy will solve the over population problem!

Surov reports that so far, he has not been under any pressure.

Opting Out of the Massive GMO Feeding Experiment

Without detailed tests, no one can pinpoint exactly what is causing the reproductive travesties in Russian hamsters and rats, Italian and Austrian mice, and livestock in India and America. And we can only speculate about the relationship between the introduction of genetically modified foods in 1996, and the corresponding upsurge in low birth weight babies, infertility, and other problems among the US population.

But many scientists, physicians, and concerned citizens don't think that the public should remain the lab animals for the biotech industry's massive uncontrolled experiment. Alexey Surov says, "We have no right to use GMOs until we understand the possible adverse effects, not only to ourselves but to future generations as well. We definitely need fully detailed studies to clarify this. Any type of contamination has to be tested before we consume it, and GMO is just one of them."

<http://www.rense.com/general90/soy.htm>

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COME BACK TO YOUR ROOTS

Coca-Cola Faces Anger From Shareholders About Use of BPA in Cans [UPDATE]

By Dan Nosowitz

April 21, 2010

Bisphenol-A, commonly called BPA, is a chemical used in many plastics that in recent years has been found capable of leaching into liquids when used in liquid containers like plastic bottles. It has also been the subject of large-scale recalls, since the FDA discovered it could cause all sorts of medical problems, including cardiovascular disease, liver disease, and diabetes. Many organizations have recalled products using BPA, including Nalgene, Whole Foods, and Eden Organics, but one in particular has not: Coca-Cola.

Oddly enough, Coke eliminated the chemical from their plastic bottles, but as it turns out, the plastic used to line aluminum cans still contains BPA. The shareholders aren't happy about the level of disclosure Coke has provided so far, saying the company has "failed to provide investors or consumers with sufficient evidence that it is taking steps to address these public health concerns." In response, they've scheduled a vote for tomorrow on a proposal that will demand the company fully disclose all measures they've taken so far.

They're right to be concerned; BPA has proven not just a health threat but a downright disaster for a company's public image--Nalgene in particular has suffered a huge loss in trust. Hopefully this pressure from the shareholders will force Coke to phase BPA out of their products entirely.

UPDATE: The shareholder resolution received a 22% vote. Michael Passoff, senior program director of the corporate social responsibility program at As You Sow (a co-filer of the anti-BPA resolution), says: "Overall, it is a great first year vote and we will be bringing it back every year until the company catches up with the rest of the industry in recognizing the risks of BPA. Coke should be concerned about where these resolutions are headed over the long term. The main implication of the resolution is that Coke is an industry laggard, and shareholders like to invest their money with leaders not laggards.

<http://www.fastcompany.com/1622520/coca-cola-faces-anger-from-shareholders-about-use-of-bpa-in-cans>

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Is your Baby's Bottle Safe and Free of Chemicals?

20th April 2010

The news that you can still buy baby bottles containing a potentially harmful chemical called bisphenol A (BPA), linked to cancer and other diseases, has triggered a wave of concern among new parents.

BPA was banned in Canada and three U.S. states two years ago and UK retailers responded at the time by promising to phase out all BPA bottles. But they are still widely available and unless you check the small print, you can't assume your baby bottles will be BPA-free.

BPA, which is one of the chemical building blocks used in polycarbonate plastics, is found in many products, including food containers.

It is known to act in a similar way to the female hormone oestrogen. Scientists call this type of chemical an 'endocrine disrupter', meaning it can cause hormonal changes. But these have only ever been tested in rats.

Concern reached a peak in 2008 when research - on rats - was published which linked BPA to increased risk of heart disease, diabetes, breast cancer and liver abnormalities.

UK health authorities claimed BPA levels are strictly regulated and that the small levels of BPA involved in the production of baby bottles don't pose a risk.

The European Food Safety Authority (eFSA) went further to say our bodies effectively metabolise and eliminate BPA and do this at doses much higher than the levels allowed. However, the eFSA has received a request from the European Commission to assess the neuro-developmental effects of BPA and, if necessary, update existing TDI levels.

This evaluation is due to end next month. Meanwhile, Denmark has temporarily banned BPA in materials that come into contact with food for children under three. France has also backed proposals to ban BPA in baby bottles.

But as old bottles still comply with European guidelines, they can continue to be sold. Unless the bottle is marked 'BPA-free', it may contain BPAs.

The key is to look for the words polycarbonate, which does contain BPAs, and polypropylene, which doesn't.

To minimise your baby's exposure to BPAs, you should:

- Avoid re-using old bottles if you're not sure whether they contain BPA.

- Heat has been shown to speed BPA leakage, so allow boiled water to cool slightly before pouring it into a bottle.
- Research suggests that folate, found in most green leafy vegetables, and genistein, found in pulses and legumes such as soya, can block BPA damage.

<http://www.dailymail.co.uk/health/article-1267386/Is-babys-bottle-safe-free-chemicals.html>



Petition Urges Congress to Regulate Hormone-Disrupting Chemical

April 22, 2010

Potomac Conservancy is seeking signatures on a petition that asks Congress to investigate the intersex fish problem.

Potomac Conservancy is seeking petition signatures in an effort to bring federal attention and funding to the problem of intersex fish.

Calling its campaign "Fish Mystery," the Silver Spring, Md.-based nonprofit group wants research to determine the causes of intersex among fish and regulation that will bring it to an end.

"Scientists are concerned about this, political leaders are concerned, and we need to be concerned since in the D.C. metro area we get our drinking water from a river where male bass have been discovered with female organs," said conservancy President H. Hedrick Belin on an April 20 conference call launching the campaign.

Researchers first found male smallmouth bass that were producing eggs in the West Virginia and Virginia headwaters of the Potomac River while investigating fish kills that took place in 2002.

It was not the first discovery anywhere of intersex fish, but discoveries have continued in the Potomac drainage and elsewhere. A 2009 U.S. States Geological Survey study reported intersex fish in one-third of 111 sites tested nationwide from 1995 through 2004.

The suspected cause: endocrine disrupting compounds, or EDCs, compounds that can interfere with the hormones that regulate development, metabolism, growth and reproduction. Modern industrial society generates thousands of natural and synthetic EDCs.

They include feedlot runoff, which can contain hormones, as well as pharmaceuticals, personal care products and industrial compounds, such as fire retardants and the

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plasticizers that make plastics flexible.

"This is the first generation that has been exposed in the womb to post-World War II synthetic chemicals," said U.S. Rep. Jim Moran, D-Va., making the connection with increased incidence of developmental disorders, autism, cancer and other illnesses.

Moran has introduced legislation to compel regulation where appropriate.

He also wants to put \$30 million toward research into the compounds and possible synergistic effects among them, and he noted that he recently became chairman of the Appropriations Subcommittee on the Interior and the Environment that would fund it.

While the problem is found in rivers across the nation and in other countries, the causes may differ.

"What causes intersex downstream of a large city sewage effluent could be very different from what's causing it in the Shenandoah River, where you have fewer people and lots of animals," said Vicki Blazer, a USGS fish pathologist who has studied the Potomac fish from the beginning.

Blazer has found intersex both above and below wastewater treatment plants and, for that reason, has begun to focus on the estrogens and other compounds in agricultural runoff.

Research this year will monitor water chemistry in small tributaries to determine what is entering waterways and when and also will examine fish tissues.

Blazer, Hedrick and Moran urge people to dispose of pharmaceuticals properly, to minimize their use of pesticides and herbicides and to avoid antimicrobials and fragrances in personal care products.

The Fish Mystery petition asks Congress to provide funding for research into the causes of intersex fish and to invest in technology that can filter EDCs from drinking water.

<http://www.statejournal.com/story.cfm?func=viewstory&storyid=78675&printview=1>



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Demasculinisation and other Side Effects

by Shanna Swan and Bernard Weiss

Cosmos Online
21 April 2010

The chemical environment is a vast, unchecked experiment on human health.

We are all unwittingly participating in a massive experiment without our consent. We are exposed to hundreds (and perhaps thousands) of man-made chemicals whose impacts on our health have barely been considered. But increasingly we are learning that many can threaten human health.

Of particular concern are those chemicals that modify how our hormones function and the multiplicity of complex signals that our bodies need to function properly. These chemicals are known as endocrine disruptors, and only now are we becoming aware of their profound influence on how we feel, how we function, how healthy we are, and how little we know about them.

Rachel Carson stirred the first notable misgivings about our contaminated environment in her 1962 summons to action, *Silent Spring*. She provoked us to listen to her sentinels: "...On the mornings that had once throbbed with the dawn chorus of scores of bird voices there was now no sound; only silence lay over the fields and woods and marsh."

Carson wrote about wildlife, where we saw the earliest clues to what we had wrought by contaminating our environment. Humans are not exempt from these consequences.

Our current understanding of how these chemicals can alter human health began with the discovery of the disastrous impacts of a drug, diethylstilbestrol, or DES. The FDA approved DES for the prevention of miscarriage in 1947.

It was marketed worldwide despite a well-done clinical study showing it was therapeutically ineffective. It proved to be a biological time bomb. Daughters of women who had been prescribed DES appeared to be healthy.

But, after undergoing the hormonal changes of adolescence, a majority of those who had been exposed early in pregnancy developed a multitude of adverse effects. They showed abnormalities of the reproductive tract; they had problems conceiving and, if they succeeded in becoming pregnant, they were far less likely to carry their pregnancy to term. *Continued on page 37*

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Most seriously, and fortunately far less often, they developed a rare form of vaginal cancer. New evidence is now suggesting that these reproductive problems can also affect the third generation.

DES is a synthetic estrogen. Other estrogenic chemicals were already known to pervade the environment; they had been targeted as the source of the eggshell thinning that had decimated bird populations such as the bald eagle.

It was a natural step to begin searching for other kinds of effects. They were not hard to find. And they provoked intense concern about human health.

These concerns culminated in a conference, held in the Wingspread Conference Centre in Wisconsin, in 1991. Its theme became the impetus for what became a prodigious research effort: chemically induced alterations in sexual development: the wildlife/human connection.

The Wingspread consensus statement listed the suspect chemicals. It described the wildlife populations that had been afflicted by chemical exposures; it linked these effects to human health by showing how we, too, are exposed; it called for remediation to prevent disorders in human populations.

The Wingspan consensus also conceived the term, 'endocrine disruption', to describe the mechanisms by which these chemicals acted. They act by mimicking and displacing natural hormones, by antagonizing their effects, by changing how the body synthesizes them, by changing their concentrations in the body.

Wingspread alerted the scientific community. But the lay public remained largely unaware of these issues until the publication in 1996 of a seminal book that was to become an international best seller: *Our Stolen Future*, by Theo Colborn, Diane Dumanoski and John Peterson Myers.

Our Stolen Future, now translated into 20 languages, aroused a silent public, led to U.S. Congressional hearings and increased funding for research and transformed the science of toxicology.

What is new about this new science? Endocrine disruptors are stealth chemicals. Unlike smoking, or DES, these chemicals are silent; they enter our bodies without our knowledge. Exposure to many of these chemicals is ubiquitous; the Centers for Disease Controls now tests regularly for nearly 150 chemicals and a majority are detectable in us. Their effects are subtle and careful (and expensive) studies are required to demonstrate these effects. The FDA withdrew approval of DES by pregnant women on the basis of only eight cases of vaginal cancer

in young women. Demonstrating effects of environmental endocrine disruptors requires far larger studies and much more subtle endpoints.

We are only now beginning to appreciate how broadly men and women differ in how they develop, in their patterns of disease and responses to treatment. Many of these differences are tied to innate hormones and other chemical signals within the body.

So it should not surprise us that endocrine disrupting chemicals can be expected to exert their effects differently in males and females. This understanding guides our current research and has led us to choose measures for our studies that are sensitive to these differences.

This current research is often guided by findings in rodents (unlike DES research where animal studies followed the discovery of the human catastrophe). In rodents we can identify subtle changes to the target organ—the reproductive tract, the brain—but in humans we must rely on what we can measure without inflicting physical harm.

And, even with animals, maleness and femaleness are not just about the genitals. Hormonal differences pervade our physiology; differences in thyroid function, immune function and, of course, behaviour.

Consider a single class of endocrine disruptors: the phthalate esters. Phthalates are produced in prodigious quantities, on the order of several millions of kilograms annually. They make plastic soft and serve as plasticizers for polyvinyl chloride products ranging from medical tubing to shower curtains.

They are found in children's toys and teething rings (now banned in the EU and U.S.), cosmetics, enteric coatings for medications, vinyl flooring and wallpaper, food packaging and many other products. The exposure sources include food, drinking water, and house dust.

Phthalates are used as 'inert' ingredients in pesticide formulations. Toxic dumps are contaminated by phthalates and they find their way into aquatic environments.

Phthalate comprise a large chemical class, and some are more toxic than others. Those of most concern have been shown to be anti-androgenic; that is, they have the potential to interfere with or reduce testosterone.

If you administer phthalates to a pregnant rodent, the male offspring exhibit a variety of reproductive tract anomalies such as undescended testes, a cleft phallus (hypospadias), and indices of feminisation such as retained nipples.

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They also show a shortened anogenital distance, the distance between the anus and the genitals. Toxicologists have traditionally used this measure to decide on the sex of newborn pups, since it is twice as long in males as in females.

As a group these changes induced by prenatal phthalate exposure have been termed the 'phthalate syndrome', which is produced by the inhibition of testosterone secretion by the foetal testis during a critical developmental period.

The usual testing paradigms in toxicology administer high doses of chemicals so that it is possible to identify adverse effects using small numbers of animals. Moreover, these chemicals are tested one at a time, and by a single route of exposure (usually oral).

We are recognising that humans are exposed to a mixture of chemicals, for example more than a dozen phthalates and their breakdown products (metabolites), and that these enter our bodies orally, dermally, by inhalation and even intravenously (for example, newborns in the neonatal intensive care nursery). These exposures can act together, producing effects that can be missed when they are examined singly.

Until recently, phthalates were not considered a threat to human health because we are exposed to much lower levels than those used in animal laboratory tests.

Not until 2005, that is. In an article now considered a landmark publication, one of us, Shanna Swan, showed that boys born to women with higher levels of phthalate metabolites in their urine exhibited shorter anogenital distances and reduced penile size.

The result aroused keen worldwide interest because these women had only been exposed to ordinary environmental levels of phthalates. It triggered a new burst of research. The findings were confirmed and extended.

It led governments and regulatory agencies to ban phthalates in toys and teething rings. The Australian government banned children's toys that contain over 1% diethylhexyl phthalate in January 2010.

Testosterone doesn't just govern genital structure. It also governs brain anatomy. Male brains differ from female brains. The differences arise from the actions of foetal testosterone.

It is the hormone that moulds and organises the brain, and this brain structure has been clearly shown to affect behaviour. Testosterone is the main source of differences between how men and women behave. Its effects can be seen from magnetic resonance images of male and female brains.

If male and female brains are different, should we expect to see maternal phthalate levels related to differences in children's behaviour? We posed that question to the same population of women whose children contributed the anogenital distance data. This time, we asked the women about their child's behaviour.

We chose a behaviour that we know differs between boys and girls: how they play and what they choose to play with. We asked that question by using a standardised questionnaire called the Preschool Activities Inventory.

It lists items such as preferred toys (trucks versus dolls, for example), modes of play (wrestling versus playing quietly), and other activities that are sex-linked.

In our 2009 article, published in International Journal of Andrology, we showed that higher phthalate concentrations in the mother's urine predicted less masculine play patterns in their boys.

It demonstrated that the brain, like the genitals, can be transformed by phthalates. This is only the beginning of the story. Phthalates are undergoing more study because we still don't know about the full scope of their effects.

And we have embarked on a new research program, this time devoted to Bisphenol A (BPA). It is a plastic ingredient found in baby bottles, can linings, and many other products. We are all exposed to BPA, and carry it in our bodies.

Bisphenol A has been banned from baby bottles in Canada. The United States Food and Drug Administration, originally lethargic about any action, has now been induced to more carefully assess the evidence pointing to its health threats. Many Australians would like to see their own government out in front on the issue.

Our own interests lie in how bisphenol A might alter brain development. It is an estrogen, like DES (as was demonstrated for both chemicals by Sir Charles Dodds in the 1930s). We are asking the question in both rats and humans. And we are starting to examine bisphenol A in a mixture with phthalates and other chemicals.

This research is a test case, so to speak, of how we can coordinate scientists from many disciplines to join our efforts to address the critical question before us; what are the human health effects of this massive experiment in which we are all unwittingly participating?

Shanna H Swan is a professor of obstetrics and gynaecology and director of the Centre for Reproductive Epidemiology at the University of Rochester School of Medicine and Dentistry in Rochester, New York. Bernard Weiss is a professor of environmental medicine at the University of Rochester School of Medicine and Dentistry in Rochester, New York.

<http://www.cosmosmagazine.com/node/3418/full>



Ban on Buviera will not stop the Plastic Revolution

By Cyril Mugenyi

June 24 2009
Daily Monitor

Production and importation of polythene bags commonly known of buveera will be illegal come January 2010, according to the National Budget recently presented by Finance Minister Syda Bumba. Polyethylene carrier bags will neither be produced nor imported in Uganda and the rest of the plastics will face an excise duty of 120 per cent. The problem of plastics disposal will be with us for the time to come.

Buveera are one of the thousands of petrochemical industrial products made through the process of polymerisation of organic molecules. Plastics are not only cheap but also easy to make and the products range from thinner ones like polythene bags to thicker ones for footwear and kitchenware. This petrochemical industry has enabled emergence of what I will call a plastics revolution in Uganda.

Next time you visit a retail or wholesale shop, you will find more than 80 per cent of the merchandise are either made of or are packaged in plastics. A shop dealing in footwear will contain about 96 per cent of all the shoes made of plastic or call it synthetic leather to be polite.

The same applies to a kitchenware shop, which will have close to 50 per cent or more of the items being of either thermo-setting or thermo-softening plastics. A shop dealing in clothes, will have items with varying percentages of plastic (call it polyester) with cotton being the most rare components on sale. Look at the floor carpets; the plastic revolution is on the rise!

Packaging of consumables has seen a rapid change from material that could be degraded either by bacterial action (biomass) or oxidation (iron/steal) to plastics.

Consumables that include detergents, cooking oils, body creams, margarine, juices, sugar, drugs, alcoholic drinks and mineral water are all packaged in disposable plastics. Drinking straws, disposable and non-disposable cups and plates are all made of polyethylene.

There appears to be a correlation between poverty levels and the amount of plastics one uses. The poorer one is, the more plastics one uses. A poorer household is likely to have more of plastic shoes, floor carpets, clothing and kitchenware than a well-off one. Although we are a cotton and hides producing country, we still have few cotton and leather products on the Market.

The challenge is, how are these containers disposed off when emptied? All these are now littered everywhere.

Another hazardous habit of setting these products on fire is on the increase. Incomplete combustion of plastics produces furans and dioxins, which are persistent organic pollutants with devastating effects on human health and the environment.

The challenge now is; does stopping production and importation of polyethylene bags solve the plastic problem? My simple answer is no. The thin carrier bags will be rare but plastic products will keep increasing. This plastic revolution is still growing strong, their disposal remains a formidable challenge. The excise duty on raw materials for plastics need to be revised upwards to discourage their production. Import tax of products made of polyethylene also needs to be looked into in addition to encouraging recycling of plastic.

I must salute the soft drinks industries who use reusable glass bottles. I wish other companies, more especially those producing mineral water, could emulate their examples.

Mr Mugenyi is a member Daily Monitor Panel of Experts

<http://www.monitor.co.ug/OpEd/Commentary/-/689364/710770/-/b5hdaez/-/index.html>



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excellent deeds, and that we should give food to the hungry, and clothes to the naked, (and be) one who removes pain and suppresses wrong doing, and who sustains the aged and eliminates the need of the have-nots. Harwa concludes: "My reward for this is being remembered for my virtue, that is to say, for the good I have done in and for the world."

Odu Ifa reveals that we do damage to the world, ourselves, and each other, in varied ways. We do damage when we fail to follow the best of our ethical and spiritual teachings and instead use religion to disrespect and impose on others to justify unjust wars, to seize and occupy other land, and to claim a special religious and racial status above and beyond all other people in the world. We do damage when we turn a blind eye to injustice, a deaf ear to truth, and an uncaring heart, away from the suffering and pain around us and throughout the world.

Frantz Fanon urged us to start a new history of humankind with other progressive people in the world, bring into being a new world and new man and woman

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Common Crop Herbicide Atrazine linked to Reproductive Mutations in Amphibians

by Christian Evans

NewsTarget.com
August 27 2007

Pollutants such as pesticides and toxins damage the ecosystem and cause a variety of damaging ailments in humans. One particular herbicide, Atrazine, has now been found to turn male frogs into hermaphrodites, rendering them impotent by causing their gonads to produce eggs.

A subject of great scientific and political controversy, Atrazine was first introduced in 1958 and today is one of the most widely used herbicides in the world. It is a potential carcinogen and has a half-life in soil of anywhere from 15 to 100 days. This time allows for Atrazine biodegradation, during which the chemical is dechlorinated until it produces an end product of cyanuric acid, a toxic compound.

Atrazine is also used throughout the world in the production of maize, sorghum, sugar cane, pineapples, chemical fallows, grassland, macadamia nuts, conifers forestry, roses and grassland. Its most common application is for use in conservation tillage systems to prevent soil erosion and runoff, and to prevent weeds from growing in major crops. As a result, a good deal of the Atrazine applied to crops is washed into rivers, streams, lakes and municipal drinking water supplies.

A scientific study revealed the truth

In 2002, a breakthrough study on the environmental effects of Atrazine was led by Dr. Tyrone B. Hayes, an associate professor of integrative biology at the University of California at Berkeley. The research revealed that Atrazine not only contaminates ground and surface water, but also is an endocrine disruptor -- chemically castrating all male amphibians by stripping them of a key hormone. This appears to have had a major impact on wild amphibians and is likely to be an important contributor to this species' global decline.

"What struck us as unbelievable was that Atrazine could cause such dramatic effects at such low levels," said Hayes. "If you take five grains of salt, divide this weight by five thousand, that is the amount of Atrazine that causes these abnormalities. Atrazine-exposed frogs don't have normal reproductive systems. The males have ovaries in their testes and much smaller vocal organs.

"The use of Atrazine in the environment is basically an

uncontrolled experiment -- there seems to be no Atrazine-free environment. Because it is so widespread, aquatic environments are at risk. It is obviously affecting frogs. We have shown serious effects on their sexual development. Some had three ovaries and three testes, some had ovaries on one side and testes on the other, one animal even had six testes...We need to ask the questions, 'What are the environmental costs of using Atrazine? What diversity have we lost?'"

Evidently, however, hermaphroditism in frogs is a well-known phenomenon that has been monitored and studied for decades all over the world. The study claims that even at low concentrations (1/30th the dose deemed safe by the EPA), Atrazine may cause hermaphroditism in North American frogs. It has also been shown to lower hormone and testosterone levels in sexually mature male frogs to much lower than normal female frogs. At this point, it is still unclear whether Atrazine leads to reduced fertility, but the likelihood seems to be that this would impair a frog's ability to breed and produce offspring.

The study research was done without any industry financing provided to Dr. Hayes and his coauthors. Hayes originally had been hired as a consultant by Ecorisk (now Syngenta) in order to conduct research on Atrazine and its effects on the environment. The results of the study were later published in April 2002 in Proceedings of the National Academy of Science, and in October 2002 in Nature magazine.

"This is very important and elegant work," said Theo Colborn, Ph.D., a senior scientist at the World Wildlife Fund. Colborn is recognized worldwide for his expertise with endocrine disrupting chemicals. "Tyrone's work demonstrates the need to do research on the safety of chemicals in the field where the animals live and at the levels to which they are exposed. The changes he found in the gonads were not discovered with the traditional high-dose Atrazine experiments used in the past. In addition, microscopic examination of the internal organs of the frogs is required to detect the hidden effects from low-dose exposure."

Results of the EPA investigation

Atrazine has been widely used by approximately 80 countries over the last 40 years. However, it has been recently banned in several countries, including France, Germany, Italy, Sweden and Norway. The weed killer is still on sale in the UK, as well as in the U.S.

The EPA and its independent Scientific Advisory Panel (SAP) scrutinized this study in 2003, concluding there was not enough information or data to determine if amphibian development was affected by Atrazine. They classified this herbicide as "not likely" to be carcinogenic

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in 2003, even recommending that the chemical's registration be renewed. According to the EPA, they did "not find any results among the available studies that would lead us to conclude that a potential cancer risk is likely from exposure to Atrazine."

However, the EPA also claimed in 2003, based on Hayes' research, that there was "sufficient evidence" to conclude there is a definite chance that Atrazine does affect amphibian reproduction and reproductive organs. The EPA was unwilling to concede --stating that these results were not consistent enough to justify a national ban on the chemical.

In August of that year, The Natural Resources Defense Council (NRDC) brought forth a lawsuit against EPA. The council charged that the EPA had failed to protect endangered species and the environment from the toxic effects of Atrazine. This was due to statements made by the EPA that this chemical has the potential to cause harm to endangered species, even though it was allowed to remain on the market.

In October 2007, the EPA will release their evaluation on the validity of Atrazine research and the effects this chemical has on amphibian gonadal development. These findings will be presented to the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Scientific Advisory Panel (SAP). These findings will include newer scientific research that was conducted in 2005/2006 by Syngenta Crop Protection, Inc. and any open literature studies that were evaluated by the EPA.

"Atrazine is just one of a long list of pesticides thought to have hormone disrupting effects and many of these turn up in our food as residues," said Sandra Bell, a pesticides campaigner with the Friends of the Earth environmental organization. "In fact, we've seen recent evidence that farmers are finding that the pesticides that the bio-tech companies sell to them to go with the GM crops are just not effective -- they're not working -- and therefore the farmers are actually resorting to older very toxic chemicals. Gender bending effects on fish and frogs raise serious concerns about the impact such chemicals are having on our wildlife, especially as the effects were found at such low levels. But even more alarming is the potential for these products to affect human health.

"I think it's clear that people don't want pesticides in their food but also that it's not just a simple issue of banning all pesticides overnight. Clearly that would be very difficult for our farmers and farmers in other countries. So what we need is a process of phasing out these chemicals and replacing them with safer alternatives and replacing them with different methods of farming. For that we do need a

commitment of resources from the Government and from the retailers to carry out research and development into different ways of farming, but also into safer products that don't leave residues in our food." In addition to the work conducted by Professor Hayes, similar research conducted by Warren P. Porter of the University of Wisconsin at Madison claims that Atrazine may also disrupt other hormonal systems in amphibious creatures.

Denying the problems with Atrazine

There are still those, however, who refuse to take these findings as fact. According to Alex Avery, Director of Research and Education at the Center for Global Food Issues (CGFI), there are many other variables that could easily be responsible for and explain amphibious hermaphroditism, such as parasites, viruses, temperature and any number of other natural factors. "Hayes's latest study is reminiscent of recent peer-reviewed studies that tried to link pesticides to frog limb abnormalities, but were debunked after further studies found natural parasitic flatworms to be the cause. Until this work has been corroborated by other labs, it must be considered preliminary and inconclusive," said Avery

Amid recent concerns about human and ecological health, environmental campaigners are calling for a ban on Atrazine. Due to the research done on this chemical by Hayes and others in the field, Atrazine now has been banned or restricted in Austria, Slovenia, Germany, Denmark, Italy, France and the UK.

The effects of Atrazine on frogs were examined prior to Hayes' work, but similar abnormalities had not been reported. This is what is primarily fueling the debate over these findings -- that Hayes and his colleagues are the only ones so far willing to state these findings as fact. So far, no other independent studies have found anything similar.

The reason, according to Hayes, is that "they were looking for the wrong things. Most people were looking for external deformities, mortality or cancer. Atrazine-induced abnormalities are subtler -- it took a year of experimentation before even we noticed the consequences." Since then, more independent and industry research has been conducted on Atrazine; many of the current conclusions are very similar to those previously made by Hayes.

Other names used by chemical companies and pesticide manufacturers to designate the herbicide "Atrazine" include: 2-chloro-4-(2-propylamino)-6-ethylamino-s-triazine, 2-chloro-4-ethylamino-6-isopropylamino-s-triazine, 2-chloro-4-ethylamino-6-isopropylamino-s-triazine, 2-chloro-4-(isopropylamino)-6-ethylamino-s-

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triazine, Ortho St. Augustine Weed and Feed, 6-chloro-N-ethyl-N-isopropyl-s-triazine-2,4-diamine, A 361, AAtrax, AAtrax 4L, AAtrax 80W, AAtrax Nine-O, Actinite PK, Akticon, Aktikon, Aktikon PK, Aktinit A, Aktinit PK, Argezin, Atrazinax, Atranex, Atrasine, Atrataf, Atratol, Atratol A, Atrazine, Atrazine 4L, Atrazine 80W, Atrazines, Atred, Atrex, Attrex, ATZ, Azinotox 500, Candex, Cekuzina-T, Chromozin, Crisamina, Crisatrina, Crisazine, Crisazina, Cyazine, Extrazine II, Farmco, Fenamine, Fenatrol, Fogard, G30027, Geigy 30027, Gesaprim, Gesaprim 50, Gesaprim 500, Gesoprim, Griffex, Griffex 4L, Hungazin, Hungazin PK, Inakor, Laddock, Maizina, Mebazine, Oleogesaprim, Oleogesaprim 200, Pitezin, Primatol, Primatol A, Primaze, Radizine, Radazine, Scotts Bonus Type S, Strazine, Triazine A 1294, Vectal, Vectal SC, Vectral SC, Weedex, Weedex A, Wonuk, Zeaphos, Zeapos, and Zeazin.

<http://www.newstarget.com/021995.html>



Continued from page 3 - Ethoes, Ethics and Taboos of African Spirituality (Myk)

who will cherish, respect and reaffirm each other, sustain the good world and pass on this good and legacy to future generations.

Let us go forward then, implores Kwanzaa, in and with unity, self-determination, cooperative economics, collective work and responsibility, purpose, creativity and faith in striving to embody and live the life-affirming, and life-enriching values of our ancestors that represent the best of what it means to be African and human in the world. Let us always strive to be a powerful presence for good in the world and constantly work for the good life of every person and people as bearers of dignity and divinity demand and deserve.

African spirituality is the most potent spirituality in the world; the highest level of science for humankind. It works for both good and evil as is with other sciences. If used for good only, as was practiced by our ancestors, civilization gallops in leaps and bounds. That was what gave us Egypt. Our spirituality must, therefore, be used only for the good of mankind as was intended by our ancestors. No one, from this day on, is allowed to use our spirituality to do evil. It must not be used to hurt, kill or destroy third parties. Diviners and their clients who use it to attack others, under any guise, commit grievous, unpardonable sin, and should be exposed, ostracized and punished legally, physically and spiritually by society and cursed by our Gods.

The Sacred Law of OoTAF: No body is allowed to use

the power of African spirituality to do evil. Traditional rulers, Obas, Emirs, Obis, kings, heads of African hamlets, communities, villages, cities or towns, are each to set up a branch of the Organisation of African Traditional Faiths, to come together at the community, town and national levels of every African country as (OoTAF). OoTAF brings together, properly trained and skilled priests of African traditional faiths in each African country; makes rules for the training of new members; establishes a hierarchical structure for all the faiths (combined as one) at branch and national levels; regulate practices of the different faiths; reward excellence and good practices, and sanctions members involved in untoward practices. Depending on the gravity of the sin, members practicing evil could loose membership of the organisation and be stopped permanently, spiritually and otherwise, from continued practice in the faiths. A similar organisation, the first, has been set up in the Rep. of Benin by the government. All other African and Black countries and communities of the world are to follow suit.

The extended family tradition is unique to Africa. All Africans must practice it and extend the tradition beyond blood relatives to all Africans and peoples world-wide.

(1) Respect for elders is a strong African tradition that has a stabilizing influence on the African family and home. Children of the Myk must respect their parents and all elders at all times. Children or youths must be humble and must diligently listen to their parents' or elders' instructions and argument and even when they disagree, must show reverence and good manners. Youths must greet elders first at all times and in all circumstances and with great courtesy. Every Myk child is a child of the entire Myk community and must be treated the way every good parent would treat their own child.

(2) Foundation of each home and family should be built on mutual respect, sincerity, and loyalty. Even then, in every situation there must be a leader. Fathers or husbands are the traditional breadwinners of the family and must strive always to fulfil this role unless incapacitated or helpless. The father or husband is the leader in the African home. Not a dictator, but one whose respect derives from his transparent love for his family and attention to details of their needs.

(i) The wife is not a beast of burden. She is entitled to develop her skills and apply them to the limit of her abilities, although mindful always of family cohesion.

(ii) There must be equal opportunities for children regardless of gender. Female children must be given, at least, equal opportunities as their brothers to develop to their maximum capacities.

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iii) Children must strive to go to school and remain and finish school. Every child must reach for a university degree, at least, and definitely must not drop out of the education system by choice or from selfish pressure from parents or third parties. Myk children must strive to be the best in their classes and in whatever careers or professions they finally embark upon or settle for.

(3) The number of children per family should be kept to manageable proportions to enable them to be provided for adequately in education and development. Black families cannot do this if they let themselves have more children than they can afford.

(4) Myks can circumcise male but not the female. Under no circumstance must a female be circumcised. It is a wicked tradition that offends social norm, degrades our best human qualities, and encourages men to be promiscuous at the expense of the female.

(5) Myks once married must make serious effort to remain married to their spouses especially if a child or children is or are involved. Therefore, marriages should not be rushed into. Both families of the couple and the immediate Myk community must be involved in the marriage process so that breaking it becomes the concern of both families and the Myk community. There is no word for divorce in the African spiritual firmament. Before a marriage becomes irretrievable, elders in both families are to be invited to come together to counsel the couple and try to salvage the marriage.

Myk's elders' council should also be given a chance to counsel the couple. If separation or divorce is inevitable, partners must continue to carry their full responsibilities financially, physically and spiritually, for the up keep of the family, so as to ensure reasonably balanced mental and psychological development of their children.

(6) Myks are hard working people. They love work and hate being idle. They believe nothing comes easy so they put in everything they have, energy, brains and resources, to excel. At work, Myks put in their best efforts as employees and are loyal and committed to their jobs. Rather than become disloyal, they change job. They do not take bribe to do the job for which they are being paid, whatever the pay. They strive always to be the best in their jobs or professions, and take pride in their jobs regardless of status. As employers they provide a peaceful caring work atmosphere for their employees.

(7) Myks must respect constituted authority whether as between management and staff or the ruler and the subject and if it is necessary to try to change or challenge applicable laws, legal and constitutional means must take

precedence over anarchy.

General: Members of the Myk do not smoke, use or deal in dangerous or illegal drugs in any form. People who do, certainly cannot be leaders in any capacity or level in the Myk or the Pan African Movement. If after being cautioned they persist in their habits, they should be dismissed from the Myk. People who cannot be seen as role models by others in the Myk, or are morally deficient in anyway, or have anti-social habits that seriously offend popular norms, natural and African traditions, cannot join the Myk and definitely cannot lead in any capacity in the Myk or the movement. Those falling into this category must first obtain clearance before joining or seeking any leadership position in the Myk from the International Secretariat of the movement.

Myks can bear any name but preferably African names, including first, others, and last names. The choice of name/s rest principally with the adult individual or recognized parents or guardians of the child.

Myks are free to dress how they like but would be considered appropriately dressed, particularly at Myk ceremonies, in African influenced or traditional costume.

Myks must all wear a symbol of the movement at all times, such as a finger-ring or broach for the purpose of quick universal identification.

Taboos: Lying, dishonesty, insincerity, betrayal of trust, cheating, crookedness and fraudulent practices of any sort are totally unacceptable behaviours within and outside the Myk. People involved in any of these evils are misfits and their actions negate the social cohesion the Myk represents.

Egocentrism and insensitivity are grievous sins in the Myk. They violate the spirit of oneness, sharing and give and take, which constitute the bedrock of the Myk cosmology. Stealing or thieving of any kind portrays idleness, laziness and indiscipline; denies others of the fruits of their legitimate labour and is parasitic on society.

Fighting and murder downgrade human worth and destroy the basis of communalism. No one has the right to injure, maim or take life, which is the most precious gift of nature. Adultery demonstrates gross lack of self-control and is indicative of disrespect for societal norms. Incest is an abomination that poisons the family unit with an ignoble virus that weakens human survival.

Lesbianism or homosexuality is a serious crime in African traditions. It is anti-humanity, anti-nature and worst than bestial because it is unrecognized in the rest of the animal kingdom. It represents the highest form of societal rot, decadence, and spells self-enfranchisement from the African family, and should be treated as such. If

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any race or group of people wants to self-destruct, may be that is their curse after centuries of exploiting and dehumanizing other racial groups. Now that they are marrying same sex, dogs and donkeys, they have obviously reached the dead end of moral decadence, and there is nothing hip about self-imposed racial annihilation through homosexuality and deviant sexual degeneracy.

Nothing in it to imitate since the Black race must survive to restore virtuous civilization to the New World of the new millennium.

Generally, those who resist falling foul of these taboos can join or remain in the Myk. No one can be a Myk and practice any of the taboos. Any member contravening any of the taboos or is found to be betraying the movement in any way, is to be tried by the Elders' Court (MzeeKuposa) of the Myk and if found guilty, publicly humiliated, punished, suspended, fined or dismissed from the movement and the Myk. Once dismissed, the fellow can never again re-join the movement anywhere in the world and members of the guilty person's family may also be so affected, depending on the judgment of the Elders' Court at the time of the new application. All dismissed fellows forfeit their rights and entitlements, cash or kind, in the movement and the Myk.

Naiwu Osahon, renowned author, philosopher of science, mystique, leader of the world Pan-African Movement.

<http://theblacklistpub.ning.com/forum/topics/ethoes-ethics-and-taboos-of>



Obama condemns Uganda's Anti-gay Bill

By Reuters

Washington
February 5 2010

U.S. President Barack Obama on Thursday denounced as "odious" a proposed anti-gay law in Uganda that has drawn international condemnation.

The Anti-Homosexuality Bill (2009), now before the House's Legal and Parliamentary Affairs Committee, proposes life imprisonment for acts of homosexuality and introduces a serious crime called "aggravated homosexuality".

"We may disagree about gay marriage, but surely we can agree that it is unconscionable to target gays and lesbians for who they are -- whether it's here in the United States or ... more extremely in odious laws that are being

proposed most recently in Uganda," Obama told the National Prayer Breakfast.

We may disagree about gay marriage, but surely we can agree that it is unconscionable to target gays and lesbians for who they are -- whether it's here in the United States or ... more extremely in odious laws that are being proposed most recently in Uganda," Obama told the National Prayer Breakfast.

U.S. Secretary of State Hillary Clinton, speaking before Obama at the annual bipartisan gathering of religious and political leaders, also criticized the draft law being considered by Uganda's parliament. Clinton said she recently called Ugandan President Yoweri Museveni and expressed the "strongest concerns" about the proposed legislation. The call was made on Dec. 20, a State Department official said.

Early this year, President Museveni publicly disowned the Anti-Homosexuality Bill, saying it does not represent the party or government position.

Mr Museveni, who said he wanted to clear the confusion the Bill has created both locally and internationally, indicated Uganda cannot risk its foreign policy by allowing the Bill to pass in its present form. He said cabinet will sit with Mr Bahati to handle the matter.

Uganda has continuously faced intense pressure from Western governments and human rights groups over the draft legislation, which was presented as a private members' bill last year.

It would prohibit sexual relations between people of the same sex as well as the recognition of homosexual relations as an acceptable lifestyle, Navi Pillay, U.N. High Commissioner for Human Rights, said last month.

Pillay said the draft law would breach international standards and it "proposes draconian punishments for people alleged to be lesbian, gay, bisexual or transgendered -- namely life imprisonment, or in some cases, the death penalty."

It could lead to a prison sentence of up to three years for anyone failing to report within 24 hours the identities of any lesbian, gay, bisexual or transgendered person, she added. Uganda's Ethics and Integrity Minister Nsaba Buturo has said a revised law would probably limit the maximum penalty for those convicted to life in prison rather than execution.

Obama, who won strong backing from homosexual voters in the 2008 presidential election, has promised to fight on their behalf.

In his State of the Union address last week, he said he would seek the repeal of the U.S. military's "don't ask,

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don't tell" policy that permits gays to serve in uniform as long as they hide their sexual orientation.

<http://www.monitor.co.ug/News/National/-/688334/856042/-/whyycce/-/index.html>



D.C. is the Nation's HIV/AIDS Capital

By George Curry

July 29th, 2009

The disclosure that more than 4 percent of Blacks in the District of Columbia have HIV, matching San Francisco's city-wide rate at the height of the epidemic in 1992, is but one example of how the disease is devastating the Black community. D.C. health officials made public a report that showed the overall HIV/AIDS city rate of 3 percent is three times the level considered a "generalized and severe" epidemic.

One percent of the population is the standard yardstick used to measure a "generalized and severe" epidemic. In addition to African-Americans, that level was exceeded in Washington by Latinos – 2 percent – and Whites at 1.4 percent.

"Our rates are higher than West Africa" Shannon L. Hader, director of the District's HIV/AIDS Administration, told the Washington Post. "They're on par with Uganda and some parts of Kenya."

The city's 2008 epidemiology report found the number of HIV and AIDS cases had risen 22 percent from the 12,500 cases reported in 2006. As bad as things appear to be in the nation's capital, the report observed, "We know that the true number of residents currently infected and living with HIV is certainly higher."

The study says 7 percent of Black men in D.C. are infected. Almost 1 in 10 residents between the ages of 40 and 49 has the virus. Approximately 3 percent of African-American women in the District of Columbia carry the virus, 58 percent of whom were infected through heterosexual sexual activity. About a quarter of Black women were infected through drug use.

Overall, 76 percent of the infected are Black. Heterosexual sexual activity was the primary mode of transmission for African-Americans at 33 percent. On the other hand, men having sex with men was the principal mode of transmission for Whites – 78 percent – and 49 percent for Latinos.

"I'm extremely angry and sad but not surprised," said

Phill Wilson, CEO of the Black AIDS Institute, the only think tank devoted exclusively to the elimination of HIV/AIDS in the African-American community. "If you wanted to create the perfect storm for an explosive HIV/AIDS epidemic, it would look like Washington D.C.

You have a public health system that is totally overwhelmed, high poverty, low HIV literacy, a history of neglect, insufficient HIV prevention infrastructure and a general populace that is not mobilized."

The HIV/AIDS epidemic is what Wilson calls "a Black disease." Although African-Americans represent only 12 percent of the U.S. population, they account for half of all diagnosed AIDS cases. Black women represent 61 percent of all new HIV infections among women, a rate nearly 15 times that of White women. And, as was the case in Washington, most Black women are more likely to be infected through heterosexual transmission. Black teens represent just 16 percent of those aged 13 to 19, but 69 percent of new AIDS cases reported among teens in 2006. A recent study in five major U.S. cities found that 46 percent of Black men having sex with men were infected with HIV, compared to 21 percent of White men having sex with other men.

This isn't the first depressing report about AIDS, so what's the answer to curbing the epidemic?

"For years, the Black AIDS Institute has been calling for a national Black AIDS mobilization," said Wilson of the Los Angeles-based Black AIDS Institute. "We've been calling for developing a 5-year plan with specific measurable goals and objectives to cut HIV rates in half, increase HIV testing by 50 percent, and increase utilization of HIV treatment and care by 50 percent. Every Black leader in America needs to stand up today and declare a war on AIDS."

C. Virginia Fields, president and CEO of the National Black Commission on AIDS, also believes testing is a key to halting the spread of the disease in the U.S. She said health patients should be routinely tested for HIV, the virus that causes AIDS. In about half of the states, a separate consent form is required to grant permission to test for HIV.

"It is time to remove that special requirement and make testing for HIV as routine as it already is for other diseases," Fields said. "It is estimated that 50 to 70 percent of new sexually transmitted cases are spread by people who don't realize they're infected."

Blacks tend to discover they are HIV positive later than Whites, meaning that many of them are late entering into treatment and, consequently don't live as long as others who were treated earlier.

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If C. Virginia Fields and other activists get their wish and have AIDS testing incorporated into routine health testing, that will place a heavier burden on crowded counseling and treatment facilities. But it's not an insurmountable burden. The question is: Do we have the national will to take on this epidemic?

<http://www.hvpress.net/news/156/ARTICLE/7447/2009-07-29.html>



US Senate asks Uganda to Withdraw Gays Bill

By Emmanuel Gyezaho

April 16 2010
Daily Monitor, Kampala

The US Senate has passed a resolution imploring Ugandan Members of Parliament to withdraw a private member's Bill that would impose death on gay people.

But will the resolution influence Ugandan MPs currently considering the Anti-Homosexuality Bill 2009? Speaker Edward Ssekandi said yesterday that the resolution, passed Tuesday night, will not force Parliament to give in to western pressure and withdraw Ndoorwa West MP David Bahati's controversial Bill.

He told Daily Monitor in a telephone interview that there was no possibility of Parliament "totally rejecting" the proposed law.

"Those against the Bill are entitled to their views," said Mr Ssekandi, "But what they should do is sensitise our people about the merits or demerits of the Bill." He added: "The resolution may influence us but there is no procedure [currently available] that we can take of totally rejecting the Bill."

International gay rights activists have lauded the Senate, the upper House of the bicameral U.S Congress, for joining the chorus of those cautioning Uganda, and said the resolution expresses the U.S government's unequivocal opposition to the proposed Bill. Mr Ssekandi said the Senate "may be right or wrong", but that is a decision the Uganda Parliament would have to make.

Mr Bahati said yesterday that he would not waiver in his pursuit for the Bill's enactment despite the amount of condemnation his proposed law has generated. He suggested, however, that powerful gay lobbyists in the U.S had influenced the Senate's decision.

"It is a pity that people who should be defenders of dem-

ocracy are trying to interfere in a democratic process here debating the dangers [of homosexuality] affecting our children," said the MP. Although he offered no evidence to back the claim, the MP said he was "confident" that Parliament would not "entertain that kind of double standards."

U.S President Barack Obama has already condemned the Bill- famously describing the proposed legislation as "odious" in February, while President Museveni also distanced himself from the new law, urging MPs to tread carefully.

The Bill, introduced in October last year, seeks to toughen laws against homosexuality by putting to death gays who have previous convictions, are HIV-positive or engage in homosexual sex with minors, and hands down a three year jail sentence to Ugandans who fail to report homosexual activity.

<http://www.monitor.co.ug/News/National/-/688334/900372/-/wxuw4k/-/index.html>



Are Gender-Bending Chemicals Inadvertently Evolving the Human Species?

By Paul Lenda

November 23, 2009

There is a rising concern about the nature of so-called "gender-bending" chemicals that have polluted the water we drink and the air we breath in the last few decades. However, in recent years, this concern has risen dramatically in light of new evidence that demonstrates just to what extent these chemicals are effecting both human and animal populations on the planet. While initially being noticed in animals such as fish, the effects of these chemicals can now be seen in the reproductive anatomy of human males.

There have been several studies, such as the one conducted by the CHEM Trust which looked at over 250 scientific studies done globally, which indicate that the various unregulated chemicals that are getting into the water and air are affecting male populations of all species in a dire manner--they are exhibiting greater feminizing attributes and qualities. These chemicals are specifically affecting the endocrine systems of both humans and animals in such a massive manner that the effects can be seen in physiological changes. To illustrate this developing fundamental change in male physiology, the study mentioned earlier has reported that 50% of the male

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fish in the lowland rivers of England have been found with eggs growing in their testes. Not only fish, but also amphibians, reptiles, birds and mammals, including humans have exhibited these changes.

Human males are being effected in such a strong way that there is even supposition in some academic circles that the human male population has a risk of disappearing for good, a concern illustrated in the Canadian documentary *The Disappearing Male*. To take a look at some of the very real changes occurring in the male population of boys, one fundamentally big change is that infant males are being born with smaller penises. A study done at the Center for Reproductive Epidemiology at the University of Rochester has discovered that mothers across America who have been exposed to a chemical called phthalate have given birth to baby boys that have had smaller penises, shorter distances between the anus and genitalia, and occasionally undescended testicles. Another study, which was conducted by the Erasmus University in Rotterdam found that the boys of mothers that had been exposed to PCBs had a stronger desire to play with traditionally female toys, such as dolls and tea sets.

According to the European Commission, the 100,000+ chemicals which humans and animals have been exposed to in recent times are largely (99%) unregulated and safety information is lacking in nearly 85% of them. The gender-benders, which can be found in products we use such as hairspray, plastics, perfumes, nail polish, pesticides, flame retardants, baby powders, and a myriad of other products, interfere with hormones which is a reason why there is a widespread feminization of the male population. Just as polar bears have been found with lowered sperm counts, smaller penis lengths, and hermaphroditic attributes, human beings have been exhibiting the same physiological changes, as evidenced in the previously-mentioned University of Rochester study. An expert in gender-benders, Dr Pete Myers has expressed his alarm at the inadvertent evolution of the male species by noting: "We have thrown 100, 000 chemicals against a finely balanced hormone system, so it's not surprising that we are seeing some serious results. It is leading to the most rapid pace of evolution in the history of the world." This evolution that is occurring before humanity's very eyes may not be the type to be elated about. Rather, it is a cause for alarm and concern, in that if the fundamental changes, including declining sperm rates, in the male physiology continue to occur, then with the decreased gene pool can come many problems, such as the inability to withstand disease and the greater difficulty in search for a mate to propagate with.

There is a growing concern that the decline in sperm rates is contributing to a decline in the overall male population. The *Globe and Mail*, a Canadian newspaper, reports that a study has found 262,000 less boys between 1970 and 2000 have been born in the US and Japan than there would have been, thanks to a declining sex ratio at birth. Although the number seems small for the time span and the countries involved, if not dealt with soon, the number may become much greater in the future. With testosterone levels dropping 20% in the last 20 years comes the difficulty of propagating, which further threatens the continuity of the human species in the very long run. This decline in male fertility has been linked to the pollution of the water supply by testosterone-blocking chemicals, as demonstrated in a study conducted by the Brunel University, the Universities of Exeter and Reading and the Centre for Ecology & Hydrology.

The facts do not present a nice picture concerning the situation with the males of all species. If the various gender-bending chemicals are not decreased in use, regulated more strongly, or outright banned, larger and more severe consequences may arise as a result. An evolution of the human species in the manner that these chemicals are doing is having detrimental consequences on our species, as the evidence shows. Thankfully, there are measures being contemplated and actualized that would reduce the amount of these chemicals in the environment, such as the banning of PCBs. However, the feminization of the male species of such importance that the work towards eliminating this problem may be too little, too late.

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What is the Anti-Estrogenic Diet?

The Anti-Estrogenic Diet, a book by Ori Hofmekler (who also wrote The Warrior Diet), is a diet program that helps the body resist the effects of a high prevalence of estrogenic and estrogen-like chemicals in the environment that many researchers believe leads to health problems and weight gain.

Hofmekler says that the world is becoming feminized through chemicals such as atrazine (a common crop herbicide). He mentions that sperm counts are dropping worldwide, with a 20% drop seen in just one generation, and the highest level of infertility, despite the growing number of fertility drugs.

The diet consists of three phases:

1. **Detox** - Allowing the liver (and kidneys) to recuperate and clean itself. The liver is the body's detoxification organ, and is the organ under the most stress from chemical attack. When it is under duress and begins to fail, diseases such as diabetes and cirrhosis can take root. This diet allows for two weeks of herbal and nutritional therapy to allow the liver to "bounce back into shape" and assume its important role in regulating the body's metabolism with renewed vigor.
2. **High-fat stage.** Mimics diet from 10,000 years ago, before the agricultural era. Higher calorie than most diets, but still can lose weight. More than anything, it nourishes the hormone system to create sex hormones to counteract
3. **Reintroduction of foods.** Methodically and gradually reintroducing foods "in the real world". But it requires a lot of trial and error to see what agrees with your body, and what doesn't.

Commentary

The effect of estrogen mimics and endocrine disrupters is well documented and researched. There are plenty of ways to avoid exposure to these kinds of chemicals (these are not from the book, but rather what I've read about recently):

- avoiding heating food in flexible plastic containers (which contain phthalates)
- choosing organic food when possible (does not contain the herbicides and pesticides which contain hormone disrupters such as atrazine and dieldrin)
- avoiding "antibacterial" products with triclosan. They are no better than regular soaps and detergents at getting rid of dangerous bacteria, and triclosan, which

has a chemical structure similar to estrogen, has recently been found to be a hormone disrupter in the bullfrog

Avoiding estrogenic foods and eating more of the anti-estrogenic foods is a good idea. There's no harm in eating more broccoli and less hormone-laden beef, right?

ANTI-ESTROGEN DIET BASICS

In my book The Anti-Estrogenic Diet, I presented the "anti-estrogenic" approach. Its premise:

- 1) Avoiding estrogenic foods and chemicals
- 2) Consuming anti-estrogenic foods and herbs
- 3) Increasing intake of testosterone (and progesterone) promoting foods and herbs

The last element is critically important in view of the fact that our food chain has been FEMINIZED not just chemically but also biologically. Though largely unknown, the fact is that estrogenic chemical have been feminizing not only our animal food (meat, pork, poultry, etc.) but also the plant food that we eat – our last nutritional resource. The lower food chain, mostly plantfood – the main source of essential human nutrients – has been now severely compromised and here is how:

plants are inherently controlled by steroid-like substances which, like in mammals, dictate their reproduction capacity, rate of growth and structure. There is evidence that estrogens and androgens have different effects on plantdevelopment and structure. For instance, while estrogen has shown to promote flowering and inhibit root growth, testosterone has shown to promote root elongation, pollination and germination. Most importantly, chemicals in the soil can manipulate the feminine or masculine qualities in plants. Apparently, an estrogenic environment yields a more estrogenic plantwith higher concentrations of naturally occurring estrogens. The existence of plantestrogens is common knowledge. Plantestrogens were first detected in the 1920s and since then, over 2000 phytoestrogens have been found, some out of which have shown to possess potent estrogenic activity. What's remained largely unclear is the fact that plants inherently contain the male steroid hormones androgens.

Extensive studies detected a large variety of androgens including androstenedione, DHEA, testosterone and dihydrotestosterone (DHT) in over 100 plant species out of 130 species investigated. These findings are most revolutionary since they add a critical element to the human diet – plant androgens can potentially serve as an estrogen balancing factors, thus increasing the capacity to fight excess estrogen and restore a prime state of health.

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Plant androgens could be the MISSING LINK to our nutrition today. The knowledge how to choose testosterone dense plants over estrogen dense plants may make the difference between being lean, powerful and healthy, and being fat, weak and sick. Researchers have been speculating that human nutrition was primarily BALANCED between male food and female food. Most likely that's how things were millenniums ago. But what about our nutrition today?

Have we been losing the gender balance in our food? Interestingly, the activity caused by male plants was several times lower than that caused by the extract from female plants. It is becoming evidently clear that our food chain has lost its ecological balance becoming more and more feminine with less and less testosterone promoting male foods. In other words, our food chain that was once balanced between masculine and feminine properties has been polluted with estrogenic petrochemicals, and is now becoming biologically FEMINIZED. The farm animals that we eat have been largely feminized by estrogenic chemicals and the plants that we eat have been losing their masculine qualities due to petro fertilizers and pesticides. Our typical variety of vegetables and fruits may NOT be sufficient enough to balance and counteract the excess of estrogen in our food and we certainly need to know what to do to address this problem.

The solution

Increasing intake of male plants

More studies need to be done on plant androgens and how they affect our health, but based on anecdotal evidence, male plants do work. Testosterone boosting foods and herbs such as garlic, onion, celery, radish, almonds, pine nuts, bee pollen, mucuna, ashwaganda and ginseng respectively have shown great impact on sustaining and boosting testosterone, virility, strength and vitality. In future reports I will present male supportive foods, spices and herbs in more details, but for now let me just suggest that any plant food harvested before and right after pollination, is more likely to have higher concentrations of plantandrogens than during other seasons. Evidently phytoandrogens reach max concentrations in plants during pollination and then drop rapidly thereafter. Also, there is evidence that young "green" grains are more "male oriented" than old grains (such as with green oats). The germ in grain is a great source of male hormones supportive compounds vitamin E, phytosteroids and nutritional cofactors – naturally occurring in the fat component of the germ. Note that stabilized wheat germ or rice germ could be highly beneficial in this regard.

Increasing intake of anti-estrogenic foods

Certain foods and herbs have shown the capacity to help balance estrogen in the body by inhibiting its formation or by modulating its metabolism. These include broccoli, cabbage, omega 3 oil, flax, hemp or fish oils, nuts, seeds, turmeric, garlic, onion, oranges, berries, and all greens.

Supplement with estrogen inhibitors

Certain compounds in plants have shown to inhibit estrogen by blocking the aromatase enzyme that produces estrogen (converting androgens to estrogens) and by shifting estrogen metabolism to favor the production of the beneficial metabolites 2-hydroxy estrogens over the harmful fattening and sickening metabolites 16-hydroxy estrogens. These include the flavonoids chrysin from passion flower, apigenin from chamomile, and indoles from cabbage. Cleanse your liver, kidneys and digestive tract. The liver and kidneys are the sites for steroid metabolism. There is a positive correlation between liver and kidney's health and testosterone activity.

Testosterone's impact on the body depends on the level of free testosterone and what becomes evidently clear is that levels of free testosterone DECLINES when the liver is strained or overwhelmed with toxins. Toxicity promotes a process in the liver that DEACTIVATES testosterone by binding it to certain proteins called sex hormone binding globulins (SHBG). Moreover, toxicity increases the level of estrogen and cortisol over testosterone – a process that further diminishes testosterone's impact on the body. At this point, it doesn't matter whether and how much testosterone was ingested or even rejected – due to high levels of SHBG, or an excess of estrogen and cortisol, much of the testosterone pool will be rendered inactive. To avoid this problem, which also accelerates with aging and stress, it is important to CLEANSE all the body's detoxifying organs on a daily basis. Fruits and greens on empty stomach have a detoxifying effect on the body, nonetheless it is also important to supplement with detoxifying herbs.

In conclusion

The incorporation of testosterone boosting foods and anti-estrogenic foods with estrogen inhibitors supplements and liver, kidneys and digestive tract cleansing herbs will most likely grant the means to counteract excess estrogen and restore vigorous health. Note that excess of estrogen is not gender specific and therefore the above information can benefit both men and women.

http://hubpages.com/hub/The_Anti-Estrogenic_Diet
<http://cancervisa.wordpress.com/2008/08/19/anti-estrogen-diet-basics/>



Mission Statement

Our aim at The African Traditional Herbal Research Clinic is to propagate and promote the awareness in Afrikan peoples at home and abroad of their health, biodiversity, history and cultural richness. We gather pertinent information on these issues and disseminate these freely to our people in Uganda, the rest of the continent, and anywhere in the Diaspora where Afrikans are located.... One of the main ingredients for increasing poverty, sickness, exploitation and domination is ignorance of one's self, and the environment in which we live. Knowledge is power and the forces that control our lives don't want to lose control, so they won't stop at anything to keep certain knowledge from the people. Therefore, we are expecting a fight and opposition to our mission. However, we will endeavor to carry forward this work in *grace and perfect ways*.

“Where there is no God, there is no culture. Where there is no culture, there is no indigenous knowledge. Where there is no indigenous knowledge, there is no history. Where there is no history, there is no science or technology. The existing nature is made by our past. Let us protect and conserve our indigenous knowledge.”

CALENDAR OF EVENTS

SPECIAL EVENT: CLINIC OPENING

PLACE: AFRIKAN TRADITIONAL HERBAL RESEARCH CLINIC

TIME:

Afrikan Traditional Herbal Research Clinic
1175A Mukalazi Road, P.O. Box 29974
Bukoto, Kampala, Uganda East Africa
Phone: +256 (0) 782 917 902
Email: clinic@blackherbals.com

ADDRESS CORRECTION REQUESTED

Herb of the Month

What are some anti-estrogenic foods and herbs?

Hofmekler mentions the following foods (and their believed antiestrogenic components) that help mitigate the effects of estrogenic chemicals and estrogen mimics in the environment:

- cruciferous vegetables (like cabbage, broccoli, cauliflower, and Brussels sprouts) - have natural antiestrogenic indoles
- citrus fruits - contain flavonoids (although this is disputed by studies)
- coffee - contain flavones
- tea - polyphenols
- herbs: resveratrol, passionflower, chamomile, and turmeric
- conjugated linoleic acid (CLA) in grass-fed, organic milk products
- nuts, avocado and fertilized eggs - high-fat, "male" (y-chromosome) containing foods that nourish the hormone system

What are some estrogenic foods?

These foods should be avoided in an estrogenic diet:

- conventionally raised meat - Pay more for organic versions that haven't been pumped up with feminizing hormones.
- soy - contains genistein and daidzein, both which have hormone-disrupting activity.
- beer - Hops, the bitter herb that gives beer its bite, has estrogenic and libido-reducing effects. This is apparently why heavy beer drinkers develop "man boobs".

http://hubpages.com/hub/The_Anti-Estrogenic_Diet



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