

Rachel's Environment & Health News

#405 - Turning Point For The Chemical Industry

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In St. Louis, Missouri on July 30, Dr. Barry Commoner gave the keynote address at the Second Citizens' Conference on Dioxin. Here are excerpts:

...We meet at a crucial TIME in the history of dioxin. I am convinced that 1994 will be seen as the year in which -- despite every effort of the chemical industry and its journalistic allies to confuse and misinform us -- the true dimensions of the ominous threat of dioxin to human health became known. The profound significance of its diverse attack on living things has now become clear: Dioxin and dioxin-like substances represent the most perilous chemical threat to the health and biological integrity of human beings and the environment.

The history of dioxin is a sordid story -- of devastating sickness inflicted, unawares, on chemical workers; of callous disregard for the impact of toxic wastes on the public; of denial after denial by the chemical industry; of the industry's repeated efforts to hide the facts about dioxin and, when these become known, to distort them. ... We need to learn what must be done, now, not merely to diminish, but to END -- the menace of dioxin and its many toxic cousins to life.

... On May 26, 1971, 2,000 gallons of what was supposed to be waste oil were sprayed on the soil in a nearby horse arena [in Times Beach, Mo.]. Three days later the arena was littered with dead birds; four days later three horses and the ringmaster were sick. By June, 29 horses, 11 cats and four dogs had died; in August the six-year-old daughter of one of the owners was admitted to St. Louis Children's Hospital with a severe kidney disorder.

[This led to a decade of scientific study of dioxin, during which it became clear that dioxin is an inevitable by-product of chlorine chemistry.] ... The chemist learns to favor the production of a particular molecule by controlling temperature, pressure and other conditions and, more precisely, by introducing a catalyst. But the process is never perfect; some unwanted molecules that happen to be very stable and resist further transformation will persist -- as waste. [Dioxin is one of these stable waste products.] ... Toxic waste is not simply a matter of poor housekeeping or bad management; it is an INESCAPABLE part of chlorine-based chemical production.

... In 1985 the EPA [U.S. Environmental Protection Agency] issued its first formal cancer risk assessment of dioxin. ...EPA estimated that people would be exposed to the one-per-million [cancer] risk if they lived near soil contaminated at the level of one part per billion. When soil in Times Beach [Mo.] was found to considerably exceed this level, the EPA decided to evacuate the town.

[Because controlling dioxin is expensive, since 1985 industry has maintained relentless pressure on government to relax dioxin standards. Some animal studies showed dioxin to be an extremely potent toxin in some species; other studies showed it to be weaker in other species. EPA established a Workgroup to review the data and conclusions of its 1985 assessment.] ... The Workgroup decided that the "scientifically sound" thing to do was to average the potency values indicated by the different theories. Because the high potency value of the 1985 assessment's theory was outweighed by the more numerous low-potency theories, the average turned out to be 16 times less stringent than the 1985 risk assessment. ...[However] if the low-potency theories are right, then the original high-potency theory is wrong, and VICE VERSA -- a situation that can hardly be corrected by averaging their mutually contradictory results. [The Workgroup's flawed efforts died somewhere inside EPA, and the 1985 risk assessment survived.]

... [In 1986 EPA proposed controls on dioxin emissions from the paper industry. The industry responded by re-evaluating the data upon which EPA's 1985 risk assessment was based.] And once more, under this new assault... the 1985 risk assessment survived.

[In October 1990 EPA and the Chlorine Institute --- an industry group - - convened a conference at the Banbury Center in Long Island.] The purpose of the conference was to review new data about how dioxin caused cancer in order to provide a "scientific" basis for a new risk assessment. The "new data" were studies that actually went back to the 1970s....

The EPA participants in the Banbury Conference hurried back to Washington with news that prompted the Administrator, William K. Reilly, to predict that a new reassessment would in fact reduce the dioxin risk. [This latest dioxin risk assessment has now been prepared and will be released September 13.] But we already know what it will say, thanks to a leak of the report's conclusions a few weeks ago. The new attempt to downgrade the dioxin hazard, like all the earlier ones, has failed. But in failing, it has not simply confirmed the important but narrow result of the 1985 risk assessment that dioxin is an enormously potent carcinogen. It has also greatly expanded the range and biological impact of dioxin's effects, at levels of exposure already experienced by the entire U.S. population.

... Apparently Americans are sufficiently exposed to some very general source of dioxin to put us all well above the "acceptable" cancer risk of one in a million, and within range of its numerous other harmful effects. That source, according to the forthcoming EPA report, is chiefly food [meat and dairy products]....

Stated more simply, the situation is this: The general spread of dioxin and dioxin-like chemicals in the U.S. environment has already exposed the entire population to levels of these extremely toxic substances that are expected to cause a number of serious health effects. These include an average risk of cancer of 100 or more per million in the entire U.S. population -- 100 times greater than the risk standard that has triggered EPA remedial action, for example at Times Beach.

The EPA document also acknowledges that the newly appreciated hazards of dioxin go far beyond the risk of cancer... the expected non-cancer effects include:

- ** disruption of endocrine hormone systems, especially those related to sexual development;
- ** disruption of critical stages of embryonic development, for example of the nervous system;
- ** damage to the developing immune system, leading to increased susceptibility to infectious diseases.

These are INTERGENERATIONAL DEFECTS, they are imprinted for life on the developing fetus by the effect of dioxin on the mother and sometimes the father.

...Dioxin and dioxin-like chemicals have become widely known as "environmental hormones"... [but] There is a crucial molecular difference between dioxin and hormones. Dioxin is distinctively characterized by its chlorine atoms, which, when linked to particular carbon atoms in its molecular structure, give rise to dioxin's powerful toxic properties. In contrast, no natural hormone is chlorinated.

... [Chlorinated molecules] are rare in living things; only about 600 such substances have been identified, compared with tens of thousands of different organic substances made by living things that are NOT chlorinated. Moreover, not a single chlorinated compound has been identified as natural in mammals. In Gribble's compilation of 611 chlorinated (and other halogenated organic) compounds produced by living things, there are numerous examples from fungi, higher plants, algae, sponges, jellyfish, worms, and other marine animals.

... When the first mammals -- or possibly vertebrates -- emerged,

chlorine was abruptly excluded from this new form of life. As a result, chlorinated organic compounds like dioxin are incompatible with the distinctively complex hormonal systems and developmental processes that are characteristic of vertebrates, especially mammals.

industry; chemical industry;

... The industry's chief defense against shutting down the use of chlorine in chemical manufacturing is that it is essential to the manufacture of most of its products (true), which are in turn essential to most other industries and agriculture (not so true). It is true that synthetic organic chemicals -- plastics, pesticides, detergents and solvents -- have deeply penetrated the modern world. This was done not so much by creating new industries as it was by taking over existing forms of production. After all, we did have food before synthetic pesticides, and there was furniture, flooring and paint long before plastics. In fact, as pointed out by one of the leaders in the development of the petrochemical industry, Lord Beeching, it grows through a virulent form of industrial imperialism:

..."Instead of producing known products to satisfy existing industrial needs, it [the petrochemical industry] is, increasingly, producing new forms of matter which not only replace the materials used by existing industries, but which cause extension and modification of those industries.... To an increasing degree it forces existing industries to adapt themselves to use its products."

I believe that this is where the [chemical] industry is most vulnerable. The chemical industry is the source of persistent, dangerously toxic substances that must be eliminated. To meet that obligation, the industry must change its methods of production -- and, where necessary, its products -- beginning with the elimination of chlorine. Of course, the industry will use its enormous wealth and political power to resist such a far-reaching change. But some of its equally powerful corporate customers -- paper mills, electronics manufacturers, and the food industry -- may be less rigid. Yes, they have been invaded by the chemical industry's products that they use. But with those products have come the built-in toxic accompaniments and the economic liability for their damage.

We now know, for example, that the U.S. population is exposed to dioxin not so much from the chemical industry's direct emissions, but chiefly from food that has been contaminated with dioxin entering the food chain, especially beef and dairy products. These industries, already suffering from reduced consumption to avoid fat and cholesterol, are now likely to be hit once more, this time by the dioxin problem. Sooner or later, to protect their own economic interests--properly encouraged by grass-roots activists --they will use their own corporate power to help persuade the chemical industry to change its ways. Already the paper industry has begun to make plans for ending chlorine bleaching processes. There are even whispers from the chemical industry itself that they have got the message; very quietly, I have heard, their chemists are looking for ways to take chlorine out of their processes.

These are some of the reasons why we are at a turning point not only in the history of dioxin, but of the chemical industry itself. What has brought us to this point, I am convinced, is the environmental movement -- at its powerful grassroots: the numerous community campaigns against trash-burning incinerators; the valiant battles against hazardous waste incinerators in East Liverpool [Ohio] and Jacksonville [Arkansas]; the struggles at Times Beach [Mo.] and Love Canal [N.Y.]; the campaign for justice for the veterans exposed to Agent Orange. Let this conference, here in the place where it all began, be the start of new campaigns and new victories -- for the sake of the environment and the people who live in it.

Descriptor terms: bary commoner; dioxin; times beach, mo; studies; dioxin reassessment; cancer; endocrine disrupters; chlorine