

Final decrees for 'electrical' PCBs

The Environmental Protection Agency's final rule governing the use of potentially toxic PCBs in electrical equipment is in. It includes several departures from the version proposed last spring (SN: 5/29/82, p. 359).

PCBs — polychlorinated biphenyls — have had a variety of industrial applications, including use as a cooling and insulating liquid in equipment such as transformers and capacitors. The chemicals have been shown to be carcinogenic in animals, but their precise effect on human health is unclear (SN: 5/29/82, p. 361). While further use and manufacture of PCBs was generally banned by the 1976 Toxic Substances Control Act, that law allows EPA to grant exceptions. The agency's first list of exceptions to the ban was tossed out in 1980 by the U.S. Court of Appeals for the District of Columbia Circuit, after the Environmental Defense Fund charged EPA was being too lenient. EPA began proposing its revised list of exemptions this spring, and the final version of the electrical equipment portion appears in the Aug. 25 FEDERAL REGISTER. This final rule:

- prohibits, after Oct. 1, 1985, the use of PCB-containing transformers "that pose an exposure risk to food or feed";
- authorizes the use of all other PCB-containing transformers for the remainder of their useful lives (the average lifetime of a transformer is 30 to 40 years);
- authorizes the use of large PCB-containing capacitors used in "restricted-access electrical substations" and "contained and restricted-access indoor installations" for the remainder of their useful lives (the average lifetime of a capacitor is 25 to 30 years); and
- prohibits the use of other PCB-containing capacitors — such as those on telephone poles — after Oct. 1, 1988.

Last spring, EPA had proposed a 10-year phase-out of all PCB capacitors. Its switch to allow "restricted-access" ones has met with harsh criticism from members of environmental public interest groups who feel the latest regulation goes easy on industry at the expense of public health. Industry representatives, on the other hand, are complaining because the rule does require them to replace 1.5 million capacitors over the next six years.

Blocking pine beetle communication

The latest example of possible pest control via chemicals close to nature's own (and therefore presumed environmentally safe) involves a pine beetle pheromone-like substance. Pheromones are chemicals of communication, which can regulate the growth, development and behavior of the particular insect species that secretes them. Pine beetles secrete a pheromone that causes these insects to attack, en masse, pine trees in a specific area. Now, R. Marshall Wilson of the University of Cincinnati has developed a pheromone fraud that, in laboratory tests, appears to reduce the exposed pine beetles' ability to pick up natural pheromone signals. Marshall theorizes that such an effect could keep the insects dispersed in the wild, reducing the mass destruction of timber and opportunities for successful mating.

Fiber forecast: Polyester paroxysm

King Cotton and his court of wool, flax, silk and others will end their majority rule by 1995. That is when worldwide consumption of synthetic textile fibers will exceed that of natural fibers, states a recently released report from Predicasts, Inc., a Cleveland-based market research firm. Consumption of manmade fibers — including cellulosic ones such as rayon and noncellulosics such as nylon and polyester — will reach 27 million metric tons by 1995, according to the Predicasts report. By contrast, only 21.6 million metric tons of natural fibers are expected to be used that year.

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The no-pollen diet for honeybees

What can beekeepers feed their bees early in the spring when pollens and nectars are still scarce? Or when bees are confined in bad weather or isolated from areas of pesticide spraying? The United States Department of Agriculture now has a recommendation. It looks like peanut butter and is made of sugars and whey and yeast ingredients. Says the USDA, "Extensive testing has shown that the Beltsville Bee Diet is more effective than existing pollen substitutes in building up populations earlier and faster in the spring."

Elton Herbert and co-workers at the Agricultural Research Service in Beltsville developed the diet (which is now available commercially) after identifying exact daily requirements of the adult honey bee. Herbert says bees need the same B vitamins as people, 10 essential amino acids, cholesterol and minerals, but vitamins A, D, E and K are not required.

The new diet in addition to being nourishing should help beekeepers prevent disease in their colonies. Other bee diets, now widely used, contain larval remains, which promote the spread of disease. The bee diets allow better pollination of such early spring crops as blueberries and almonds and more honey production in the long run.

Bovine fashion fends off flies



Ag. Res. Serv./USDA

The well-dressed cow this year sports earrings that exude an essence. It's not a seductive perfume, but rather an insect repellent. The commercially manufactured ear tags contain a synthetic chemical called fenvalerate ("Ectrin"). Agricultural Research Service scientist Richard W. Miller reports that the tags do their job well. He found that out by counting the flies on 1,800 cows in Howard County, Md., some of which had been fitted with the Ectrin earrings. Miller observed an average of 120 horn flies per side on cows not protected with ear tags and less than 1 fly per side on the tag-wearing cows. Horn flies reduce the cows' weight gains, apparently by a combination of irritation, resulting in tail switching and head shaking, as well as by causing substantial blood loss. Miller explains. The ear tags also protect cows against face flies, insects that can transmit pink eye, an infection that if untreated can cause blindness. Late in the summer, however, it was necessary to complement the ear tags with mineral blocks containing a different pesticide. The pesticide tags are good for one season. "The cows don't seem to have any reaction to them. They are accustomed to wearing identification tags," Miller says.

Bacteria deep in the earth

Looking for signs of life is an activity not restricted to those who ponder the surface of Mars. Scientists have been uncertain whether any organisms live deep in the ground here on earth. William Ghiorse of Cornell University recently reported identifying bacteria in soil samples retrieved from 25-foot soil depths without contamination by shallower-living organisms. Most of the organisms recovered are very small bacteria, many oval shaped. Ghiorse and colleague D.L. Balkwill of the University of New Hampshire find a thousand-fold fewer bacteria in these subsurface samples than in the upper soil zone. Ghiorse says the existence of deep-living bacteria is good news, because they might be able to degrade toxic industrial pollutants found at low concentrations in groundwater. He cautions, however, that high concentrations of toxic pollutants might destroy sparse populations of starving subsurface bacteria, leaving permanently polluted groundwater.

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