

CHEMISTRY

Fabric chemical detected in urine

Children don't have to eat their pajamas to be affected by fabric treatment chemicals. A product of the flame retardant tris appeared in the urine of all 11 children who wore treated and washed pajamas for five to seven days in an experiment. Levels declined with time, but were still measurable 12 days after the exposure ended. Tris, now banned from pajamas manufactured or sold in the United States, has been found to cause genetic changes in bacteria (SN: 1/8/77, p. 23) and tumors in mice and rats.

A sensitive technique called negative chemical ionization was used to detect foreign compounds in body fluids, Ralph C. Dougherty of Florida State University reported at the joint Central-Great Lakes Regional Meeting of the American Chemical Society in Indianapolis. Even low concentrations of chemicals in the urine (10 parts per billion for the tris product dibromopropanol) indicate higher levels elsewhere in the body, Dougherty says. The technique has also uncovered in semen an herbicide, pentachlorophenol, known to cause bacterial mutations and detected other chlorinated organic compounds in the breast fluid of women who have not lactated.

Biochemistry of paternity

Genetic matching techniques developed to select donor organs for transplant recipients have now entered the courtroom. Paul Terasaki of the University of California at Los Angeles reports that human leucocyte antigen testing has been used in more than 1,000 paternity suits. Standard red cell matching of blood types A, B, AB and O can only rule out 10 percent of the putative fathers. However, by examining genetic markers on white blood cells, paternity can be resolved 90 percent of the time, Terasaki says.

At least 60 different white blood cell markers are now known and hundreds more probably exist, Terasaki explains. An individual inherits two from each parent, so there are many possible combinations. If a child has the same type as the putative father, the tissue typing laboratory calculates the statistical probability of paternity based on the type's frequency in the population. Of the cases referred to the UCLA laboratory between 1975 and 1977, 25 percent of the men were not the true fathers and 64 percent were thought to be the father with a probability of at least 90 percent.

Better bid for bitter beer

Beer's pleasant bitterness comes from the hop plants brewed. Thus breeders search for new varieties with superior bitterness. In making experimental crosses, selecting the female parent has been easy. Breeders analyze the alpha acid content of the flower's 15,000 to 20,000 lupulin glands, which can be readily extracted from the petal base.

Until now there has been no way to isolate lupulin glands from male plants for analysis. The male has just 10 to 100 glands buried deep among the pollen sacks. Breeders could only estimate the male characteristic by observing its progeny. Sam T. Likens, a Department of Agriculture chemist in Corvallis, Ore., has developed a simple method for isolating and analyzing the male lupulin glands. The glands float to the surface if the male flowers and water are stirred for a few moments in an electric blender. By this procedure, Likens can evaluate 20 male hop plants in a single day; such analysis by progeny testing takes two years. Likens believes that flavor, as well as bitterness, comes from the hops' lupulin glands. He plans to use his technique to identify flavor components and further reduce the guesswork in improving beer taste.

BEHAVIOR

Biorhythms: Going, going . . . gone

One of the most popular pieces of evidence disputing the biorhythm theory is New York Yankee right fielder Reggie Jackson's performance in the final game at last year's World Series against the Los Angeles Dodgers. Supposedly at the low point of his biorhythmic cycle, Reggie, Reggie, Reggie — as fans of his candy bar like to call him—hit home run, home run, home run in his last three at bats to propel his team to the world championship.

A somewhat more scientific debunking of biorhythms has now been published in the April PERCEPTUAL AND MOTOR SKILLS. Three researchers at Laurentian University in Sudbury, Ontario, analyzed 400 mining accidents from two separate industries in relation to the "critical days" alleged to occur periodically in a person's biorhythmic cycle. (According to the theory, physical cycles repeat every 23 days, emotional cycles every 28 days and intellectual cycles every 33 days.)

The data "do not support any of the basic biorhythmic predictions," report Michael A. Persinger, Walter J. Cooke and Jean T. Janes. "Mining accidents which involved both surface and underground events were not more likely to occur on critical days, around critical days or during descending ('down') portions of the various cycles."

The scientists go on to effectively dismiss the biorhythm model as a legitimate phenomenon. "No doubt further theoretical criticisms of biorhythms would be tantamount to shooting a unicorn," they conclude. "However, the concerned scientist . . . is faced with a dilemma. Investigation of such claims is likely to be fruitless, but the avoidance of the problem allows poorly collected data and erroneous interpretation to remain as the only information available."

Rock concerts and hearing

Been to a rock concert lately? Huh? I said. . . . If so, chances are you may have had some problems hearing afterward, according to a study of 323 college and high school students who attended at least one rock concert last year in "a medium sized southeastern city."

Among the college students, 71 percent of those who went to one or two concerts reported tinnitus, or muffled sound, after the concerts and 90 percent of those attending three or more concerts reported similar, temporary, effects. For high school students, the corresponding figures were 65 percent for one or two concerts and 82 percent for three or more.

Nearly seven of 10 college and four of 10 high school students said that some concerts had been louder than they preferred, report Jeff Lienau of L&M Consultants in Huntsville, Ala., and D. G. Hays of the University of Alabama psychology department. They presented their findings recently at a meeting of the Acoustical Society of America.

The researchers also reported that "students who reported using both [marijuana and alcohol] attended more concerts on the average and liked louder concerts. Those who used only alcohol had more conservative preferences in music and volume.

"Our position is that a person should seriously evaluate the esthetic and social benefits of attending loud rock music events as balanced against the possible risks," say Lienau and Hays, "especially since a number of attendees feel that the music at some concerts would be preferable if it were softer.

"Rock musicians and audiences are a potentially volatile group when aroused," say the researchers. "Assuming loud rock music is dangerous, we believe an acceptable solution may be found only after proper identification of the causes for the audience/musicians volume preferences."