Biotech lawsuits filed, regs amended

It has been a busy season for the proponents, opponents and components of biotechnology regulations. The latest events are this week's filing of a summary judgment motion in U.S. District Court asking that the federal government recall a genetically engineered vaccine, and the amending of recombinant DNA guidelines by a federal advisory board.

The vaccine, designed to protect swine against pseudorabies, a viral disease that can kill pigs, has been the subject of controversy for nearly a year. Derived from a live virus with part of its genetic material deleted, the vaccine had been field-tested and was in commercial use when the U.S. Department of Agriculture (USDA) stopped its sale last April (SN: 4/12/86, p.228), but allowed sales to resume a month later (SN: 5/10/86, p.295). The motion filed this week by the Washington, D.C.-based Foundation on Economic Trends is related to a suit it filed last spring charging that USDA did not follow correct procedure in approving the vaccine for sale.

A suit filed in November against Novagene, Inc., Houston-based developer of the vaccine, resulted in this week's summary judgment request by the foundation, which is headed by activist Jeremy Rifkin. The November suit was filed by TechAmerica Group, Inc., of Omaha, Neb., which produces the vaccine. According to papers filed in a Houston federal court, TechAmerica accuses Novagene of "knowingly misrepresenting certain key characteristics" of the vaccine, including information regarding its safety.

Rifkin said in an interview that the TechAmerica suit, which he feels questions Novagene's scientific results, strengthens his foundation's criticisms of the regulatory process. However, a TechAmerica spokesman says the issue was not a problem with Novagene's research results. And David Banker, Novagene's chief operating officer, told SCIENCE NEWS that "the product is totally safe as determined by the USDA, and we stand behind it." Neither Novagene nor TechAmerica will discuss the scientific or legal details – leaving questions unanswered regarding the suit's possible effect on the vaccine's availability.

David Espeseth of the Animal and Plant Health Inspection Service, the Hyattsville, Md.-based USDA branch that that approved the vaccine, says the TechAmerica suit most likely will not affect the vaccine's federal approval. "We certainly haven't seen anything that would suggest need for a change in the current status [of the vaccine]," he says.

A special National Institutes of Health (NIH) committee was appointed last year to investigate the field-testing of the vaccine, which was directed by Saul Kit of Baylor College of Medicine in Houston, developer of the vaccine for Novagene (SN: 5/10/86, p.295). Recently, that committee mildly reprimanded Kit for not consulting biotechnology advisory committees before conducting those tests.

The NIH action illustrates the confusion surrounding biotech regulations. It has been unclear what actually constitutes a "deliberate release" of organisms into the environment, and whether, for purposes of NIH review, gene deletion procedures should not be considered part of genetic engineering, since no foreign genetic material is introduced. The question of which federal agency has jurisdiction over an individual genetically engineered product or process is yet another gray area. In a continuing effort to address these questions, NIH's Recombinant DNA Advisory Committee met this week to refine some of its guidelines.

In amending previously accepted guidelines, committee members agreed that additional approval for recombinant DNA experimentation from NIH was not necessary if already obtained from another federal agency – with the notable exception of human gene therapy. Rather than accept a proposed redefinition of "recombinant DNA," the committee voted to exempt certain types of organisms from normal review. It also voted to loosen regulation of large-scale fermentation processes using genetically engineered strains of certain organisms.

– D.D. Edwards

A periodic table for molecules

Back in the 19th century, D.I. Medeleev systematized chemical knowledge of his day by drawing up the periodic table of elements. By arranging the elements according to two properties, atomic number and chemical valence, he could show why elements come in families that make compounds preferentially with certain other families. Later work showed how Mendeleev's periodic arrangement arises from the electronic properties of atoms and so is the key to an understanding of basic chemistry.

Now, Mendeleev's work is being extended to molecules, Ray Hefferlin of Southern College in Collegedale, Tenn., told last week's San Francisco meeting of the American Physical Society and the American Association of Physics Teachers.

Work at Southern College since 1977 has shown that the periodic law applies at least to molecules made of two atoms. Their chemical properties can be predicted, and they form periodic families just as the elements do.

On Mendeleev's chart each element has a location in a specific row and column, and that location determines what it does chemically. Mendeleev's chart, having only two dimensions, could be drawn on a sheet of paper. But for two-atom molecules, four dimensions are required – the row and column addresses of each atom in the molecule. A four-dimensional chart cannot be drawn on paper with any ease, although Hefferlin says his students have produced some interesting computer projections to visualize it.

Hefferlin says the project is ideal work to do at an undergraduate college without sophisticated experimental equipment and with undergraduate students who are not experienced in advanced research techniques. It requires collecting and correlating a lot of data on chemical properties of compounds and involves a lot of hand calculation and computer feeding.

One important thing about a computer memory is that, unlike the human eye, it does not care how many dimensions there are. If the same periodic principle applies to three- and four-atom molecules as to those with two, it will presumably involve even more dimensions. The researchers at Southern College are now working on them. *– D. E. Thomsen*

Collision at 1.8 TeV

The deeper physicists wish to probe the structure of matter, and the smaller and finer the details they wish to discuss, the greater is the energy they must expend to get there. This month the Tevatron at the Fermi National Accelerator Laboratory in Batavia, Ill. (SN: 3/22/86, p.180) began to do physics experiments in which protons and antiprotons strike each other head-on, putting a total energy of 1.8 trillion electron-volts (1.8 TeV) at the disposal of physicists. This is the highest energy of any physics experiment in the world and three times that available at the nearest competitor, the CERN laboratory in Geneva, Switzerland.

In a very sophisticated way, the experiment is the equivalent of throwing proton and antiproton together so that they break up into whatever is inside them. Those insides then combine with each other in a multitude of ways, producing many kinds of particles, which will give physicists insights into fundamental structures and processes on the finest level yet attained. The results of the collisions are recorded by a huge new detector.

The Tevatron is likely to be the highest-energy physics laboratory until sometime in the 1990s, when the Superconducting Super Collider (see p.84) begins to operate. □