



EPIDEMIOLOGY BULLETIN

James B. Kenley, M.D., Commissioner
Grayson B. Miller, Jr., M.D., Epidemiologist

Editor: Carl W. Armstrong, M.D.

December, 1984

Volume 84, Number 12

Associated Risks

Uranium Mining/Milling Assessed

An assessment was recently completed of the health risks associated with the proposed uranium mining and milling in Pittsylvania County, Virginia. The analysis was performed by *Senes Consultants Limited* of Toronto, Canada for the Uranium Task Force, on which the Virginia Department of Health has been represented.

The consultants examined the proposed technology for the mining/milling operation, data from computer models which estimated radiation exposures from various pathways (e.g. air, food, water), and the scientific literature pertaining to the relationships between radiation dose and health risk.

The radiation dose equivalent* for a

maximally exposed individual off site was projected to be 7.8 mrem (millirem) per year. Most of this dose (94%) would be contributed by airborne releases of radon from the combined facility; most of the radon, in turn, would come from the mine rather than the mill or tailings. For the average Halifax resident (population within 50 miles of the site) the dose was projected to be 0.04 mrem/yr (0.15 mrem/yr if unattenuated water seepage was assumed.)

The annual risk of fatal cancer for a hypothetical, off site, maximally exposed individual was estimated to be just under one in one million. For the population within a 50 mile radius, the number of excess fatal cancers was estimated to be 0.0031 per year. This was compared with the number of cancer deaths in this population which would be expected even if uranium mining/milling were not carried out. At current rates, 18% of the U.S. pop-

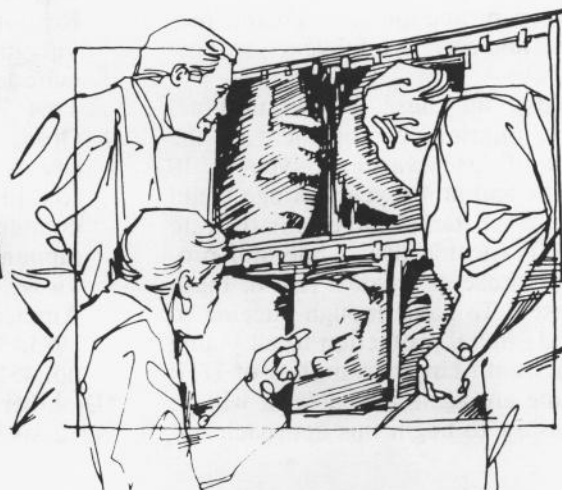
ulation eventually dies of cancer. Therefore 140,000 cancer deaths would be expected naturally in the 789,112 persons within 50 miles of the site.

These doses and risk estimates were put in perspective by comparison with the background radiation dose and risks associated with activities commonly undertaken. The current background radiation levels near the proposed site have been measured at 90 mrem/yr (gamma) plus 0.48 pCi/L (radon). Risks (probability of fatal cancer) associated with these measurements are, respectively, 9×10^{-6} and 12×10^{-6} , for a total annual risk of 21 in a million (21×10^{-6}). Examples of activities which have been statistically associated with a risk of death of one in one million include traveling 50 miles by car, and smoking one to two cigarettes.

The consultants, in arriving at their conclusions, had to make a number of assumptions, including: the risk of low dose radiation exposure can be estimated from the known risk associated with higher doses by using a linear, no threshold model; the lifetime risk from exposure to one working-level-month (WLM) of radon is 1×10^{-4} ; finally, there would be no unplanned (accidental) discharges of radionuclides.

Copies of the full report prepared by Senes Consultants Ltd. are available, for sale, by the Division of Legislative Services (804) 786-3591.

*Dose equivalents are whole body equivalents. Doses to predominantly one organ (e.g. the lung) can be converted to whole body dose equivalents for comparison purposes.



Diphtheria-Tetanus-Pertussis Vaccine Shortage

In the past 6 months, major changes have occurred in the pattern of manufacture and distribution of diphtheria-tetanus-pertussis* (DTP) vaccine in the United States. Now, two of the three U.S. commercial manufacturers (Wyeth and Connaught, Inc.) have stopped distribution of their products. Thus, only one manufacturer (Lederle) now markets DTP vaccine in the United States. Lederle has been increasing its production and expanding its facilities to meet current needs. Careful monitoring of supplies and production schedules previously indicated that national supplies would be adequate. However, some recent lots of Lederle DTP vaccine have failed to meet the manufacturer's requirements for release. Production and testing of this three-component vaccine is complex and requires several months. No new vaccine lots may be available until sometime in February 1985. Comparison of available stocks and the quantity of DTP vaccine now being distributed with the usual national utilization of DTP vaccine indicates that, if current use patterns continue, beginning in January 1985, supplies of DTP vaccine will be very limited, and some areas may be without DTP vaccine. This situation may continue through most of 1985.

To minimize the health impact of this shortage, two major options exist—to reduce the amount of vaccine given in a particular dose and to postpone one or more doses. Because it is impossible to predict the degree of protection conferred by partial doses, this option is not recommended (1). Consequently, consideration has been given to the possibility of postponing one or more doses of the current immunization schedule, which calls for the administration of DTP vaccine at 2, 4, 6, and 18 months of age, with a fifth dose at 4-6 years of age.

With pertussis, there is a significant risk of infection in infancy and early childhood, with 2,463 cases reported in 1983 (51% of them among infants under 1 year old). Additionally, infants are more likely to suffer complications or death from pertussis than are older children. Consequently, it is critical to continue providing protection against pertussis to infants. The first three doses of DTP vaccine provide protection against pertussis in



70%-90% of recipients and immunity to diphtheria and tetanus in over 90% of recipients (2-4). The doses given at 18 months and at 4-6 years of age enhance protection through the pre-school and early school years, respectively.

Taking all these factors into account, interim postponement of the doses of DTP vaccine given at 18 months and at 4-6 years of age could achieve substantial savings in the rate of DTP vaccine use, while still protecting those at greatest risk of these diseases. To have enough vaccine to provide initial protection to all young infants until larger quantities of DTP vaccine are again available, it will be necessary to begin this approach im-

mediately.

After consultation with members of the Immunization Practices Advisory Committee and the Committee on Infectious Diseases of the American Academy of Pediatrics, the following interim recommendations are made:

1. Effective immediately, all health-care providers should postpone administration of the DTP vaccine doses usually given at 18 months and 4-6 years of age (fourth and fifth doses) until greater supplies are available.
2. When adequate DTP vaccine becomes available, steps should be taken to recall all children under 7 years of age who miss these doses for remedial immunization.

If these recommendations are followed by all providers of DTP vaccine throughout this temporary vaccine shortage, immunity in infants will be maintained at the best possible levels. Public health-care providers and professional organizations throughout the United States have been notified and are being urged to follow these recommendations.

Reported by U.S. Public Health Service Interagency Group to Monitor Vaccine Development, Production, and Usage. Reprinted from MMWR 1984; 33: 695-6.

1. ACIP. Diphtheria, tetanus, and pertussis guidelines for vaccine prophylaxis and other preventive measures. *MMWR* 1981; 30: 392-96, 401-7; 1981; 420.
2. CDC. Pertussis—United States, 1982 and 1983. *MMWR* 1984; 33: 573-5.
3. Brown, GC, Volk VK, Gottshall RY, Kendrick PL, Anderson HD. Responses of infants to DTP-P vaccine used in nine injection schedules. *Public Health Rep* 1964; 79: 585-602.
4. Orenstein WA, Weisfeld JS, Halsey NA. Diphtheria and tetanus toxoids and pertussis vaccine, combined. In: *Recent advances in immunization: a bibliographic review*. Washington, D.C.: Pan American Health Organization, 1983: 30-51. (Scientific publication no. 451).

*Diphtheria and Tetanus Toxoids and Pertussis Vaccine, Adsorbed.

Outbreak of Carbon Monoxide Poisoning Traced to Gasoline Forklift

On September 27, 1984, 41 employees of a firm in Virginia Beach were transported to two hospitals after several became ill with presumed carbon monoxide poisoning. It was suspected, and later confirmed, that the carbon monoxide was generated by a gasoline forklift which was being used to install machinery in a new section of the facility.

Reports from the hospital indicated carboxyhemoglobin levels in blood samples obtained from the employees ranged from 6% to 27%. This relates to exposure levels equal to approximately 150 parts per million (ppm) as

an eight hour time weighted average (TWA). The Virginia Occupational Safety and Health (VOSH) Standard for carbon monoxide is 50 ppm as an eight hour TWA. The time of exposure was approximately two hours. These levels, in this time frame, indicate that peak exposures were in excess of 600 ppm. All employees were treated and released by the hospitals.

This accident was investigated by the Bureau of Occupational Health. The site was inspected, following which one serious citation was issued with a \$240 penalty.



Subject Index for Volume 84

New Epidemiologist in Charge of Surveillance

Mr. Leslie M. Branch has been hired by the Division of Epidemiology to manage surveillance activities. Mr. Branch began working for the Department of Health 12 years ago. He was initially assigned to the Richmond City Health Department as a venereal disease program representative. He was made supervisor of the City's ve-

neral disease field staff in 1976, and supervisor of the venereal disease program for the central and northwest regions in 1982.

Mr. Branch can be reached by calling (804) 786-6261 or by leaving a message in the Division's electronic mailbox (VA.EPI) on TELENET'S MED/MAIL.

Influenza Activity—Virginia

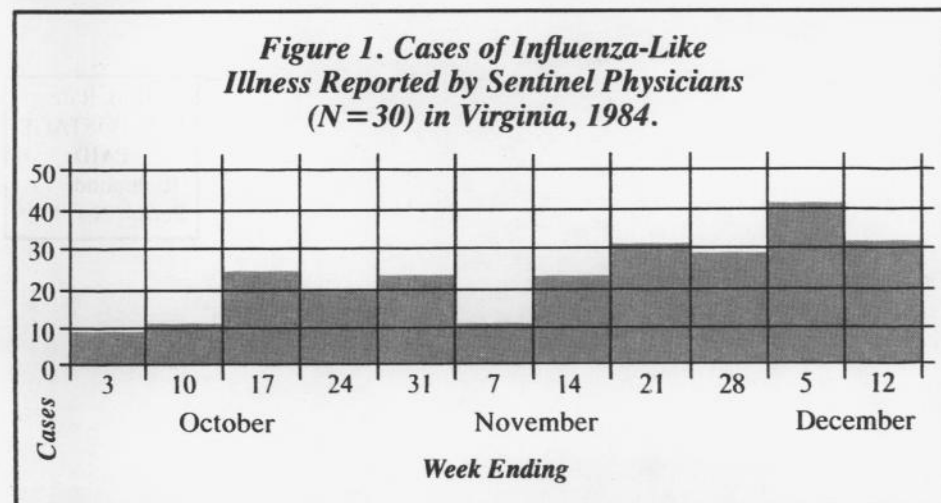
As of December 17, reports of flu-like illness from 30 sentinel physicians around the Commonwealth were still indicative of only background activity (Figure 1). To date no laboratory-confirmed influenza has been reported by the state lab (DCLS).

Early reports of influenza in the U.S. and other countries in the Northern Hemisphere are consistent with

previous reports from the Southern Hemisphere, in that there is continued circulation of A(H3N2), A(H1N1), and influenza B viruses.¹

Reference

- Centers for Disease Control. Influenza Activity—Northern Hemisphere, 1984. MMWR 1984; 33: 651-2.



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Month: December, 1984

| Disease | State | | | | | Regions | | | | |
|--------------------------------|------------|------------|---------------|--------|---------------------|------------|----|------|----|----|
| | This Month | Last Month | Total to Date | | Mean 5 Year To Date | This Month | | | | |
| | | | 1984 | 1983 | | N.W. | N. | S.W. | C. | E. |
| Measles | 0 | 0 | 5 | 23 | 136 | 0 | 0 | 0 | 0 | 0 |
| Mumps | 2 | 0 | 19 | 37 | 81 | 0 | 0 | 0 | 1 | 1 |
| Pertussis | 0 | 0 | 19 | 50 | 23 | 0 | 0 | 0 | 0 | 0 |
| Rubella | 1 | 0 | 1 | 2 | 55 | 0 | 0 | 0 | 1 | 0 |
| Meningitis—Aseptic | 21 | 16 | 257 | 338 | 266 | 4 | 1 | 4 | 9 | 3 |
| *Bacterial | 35 | 4 | 237 | 236 | 206 | 8 | 4 | 8 | 4 | 11 |
| Hepatitis A (Infectious) | 22 | 11 | 124 | 126 | 220 | 0 | 3 | 16 | 0 | 3 |
| B (Serum) | 59 | 33 | 515 | 528 | 509 | 1 | 11 | 13 | 5 | 29 |
| Non-A, Non-B | 16 | 3 | 99 | 84 | **62 | 2 | 0 | 1 | 3 | 10 |
| Salmonellosis | 59 | 115 | 1,264 | 1,471 | 1,393 | 6 | 14 | 5 | 15 | 19 |
| Shigellosis | 14 | 7 | 200 | 285 | 426 | 3 | 3 | 0 | 3 | 5 |
| Campylobacter Infections | 83 | 62 | 665 | 588 | **325 | 13 | 7 | 5 | 15 | 43 |
| Tuberculosis | 64 | 27 | 473 | 502 | — | — | — | — | — | — |
| Syphilis (Primary & Secondary) | 27 | 33 | 465 | 564 | 597 | 0 | 5 | 0 | 6 | 16 |
| Gonorrhea | 1967 | 1495 | 20,171 | 21,119 | 22,041 | — | — | — | — | — |
| Rocky Mountain Spotted Fever | 0 | 0 | 44 | 60 | 86 | 0 | 0 | 0 | 0 | 0 |
| Rabies in Animals | 13 | 10 | 209 | 625 | 319 | 9 | 3 | 0 | 1 | 0 |
| Meningococcal Infections | 9 | 6 | 69 | 81 | 83 | 1 | 1 | 2 | 2 | 3 |
| Influenza | 6 | 19 | 1129 | 911 | 1577 | 0 | 0 | 4 | 0 | 2 |
| Toxic Shock Syndrome | 0 | 0 | 7 | 9 | 8 | 0 | 0 | 0 | 0 | 0 |
| Reyes Syndrome | 0 | 0 | 6 | 6 | 13 | 0 | 0 | 0 | 0 | 0 |
| Legionellosis | 7 | 3 | 35 | 24 | 23 | 1 | 1 | 3 | 1 | 1 |
| Kawasaki's Disease | 10 | 0 | 29 | 39 | 21 | 1 | 1 | 2 | 6 | 0 |
| Other: | | | | | | | | | | |

Counties Reporting Animal Rabies: Augusta 2 skunks; Fauquier 2 raccoons; Frederick 1 raccoon; 1 fox; Greene 1 raccoon; Louisa 1 skunk; Rockingham 1 skunk; Fairfax 2 raccoons; Loudoun 1 raccoon, Hopwell 1 bat.

Occupational Illnesses: Pneumoconiosis 15; Silicosis 10; Hearing loss 9; Carpal tunnel syndrome 8; Asbestosis 8; Dermatoses 2; Byssinosis 1; Mesothelioma 1.

**4 year mean

*other than meningococcal

Published Monthly by the
VIRGINIA HEALTH DEPARTMENT
 Division of Epidemiology
 109 Governor Street
 Richmond, Virginia 23219

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