

INFLUENZA - Continued

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LEAD ABSORPTION - Georgia

In October 1974, 3 instructors at the DeKalb County, Georgia, indoor police firing range were found by means of a routine screening program to have blood lead levels of 139, 128, and 109 $\mu\text{g}/100\text{ml}$ (Table 1). A blood lead level of 80 $\mu\text{g}/100\text{ml}$ or more in an adult is considered by the National Institute of Occupational Safety and Health (NIOSH) to represent "unacceptable absorption of lead posing a risk of lead poisoning (1)."

Two of the instructors (cases 1 and 3) had reported occasional abdominal pain, and 1 exhibited a lead line on the lingual surface of his lower gum. No additional signs or symptoms of abnormal lead absorption were noted. Abnormalities of both motor and sensory nerve conduction were demonstrated in case 2; nerve conduction data are pending for case 1. Electrocardiogram, creatinine clearance, blood glucose, and liver function studies were normal in all 3, as were psychological profiles.

Repeat testing of the same individuals on November 7, 3½ weeks after the temporary closing of the range, showed that levels had fallen to 80, 53, and 56 $\mu\text{g}/100\text{ml}$. Free erythrocyte protoporphyrin (FEP) levels on that date were 527, 466, and 522 $\mu\text{g}/100\text{ml}$ RBC (normal ≤ 50 $\mu\text{g}/100\text{ml}$ RBC). Screening of blood levels in 34 additional policemen, 15 weekly shooters and 19 less frequent shooters, showed all values to be below 80 $\mu\text{g}/100\text{ml}$ (mean 30 $\mu\text{g}/100\text{ml}$).

Epidemiologic investigation revealed the most likely sources of the absorbed lead to have been either lead dust produced during revolver firing or lead vapor produced during the melting down of scrap lead to make lead slugs. Each instructor fired 200 or more rounds of lead ammunition per working day (.38 special, 148-grain wad-cutter slug with a 2.5-grain powder lead). Depending upon the alignment between the gun cylinder and barrel some shearing off and scattering of tiny lead fragments could have occurred with each shot as the slug crossed the air gap between cylinder and barrel (2,3). Furthermore, studies measuring the airborne lead levels at the firing line showed an increase from 0.00mg/m³ before firing to 3.13 mg/m³ after 16 minutes of firing. These data suggest that ventilation at the range was inadequate. NIOSH recommends that occupational exposure to inorganic lead not exceed a concentration of 0.15mg/m³, determined as a time-weighted average for an 8-hour workday (1).

The melting down of scrap lead to make slugs was practiced on the premises of the DeKalb County range until early 1972. This procedure required the almost continuous operation of an electric melting pot at 900°-950°F and produced lead vapor. Case 1 had molded bullets in this fashion for 13 years, and cases 2 and 3 for 3 years.

(Reported by Alexander S. McKinney, MD, Linton C. Hopkins, MD, Department of Medicine (Neurology), Emory University School of Medicine; William A. Price, Safety Officer, DeKalb County Merit System; F. D. Hand, Chief, DeKalb County Police Department; Henry G. Palmer, MD, Assistant

Table 1
Lead Absorption Case Histories and Laboratory Data for
Firing Range Personnel
DeKalb County, Georgia, October-November 1974

	Case 1	Case 2	Case 3
Age/Sex	44/M	40/F	34/F
Symptoms and Signs	Abdominal pain; lead line	None	Abdominal pain
Years as Instructor	15	5	5
Blood Lead ($\mu\text{g}/100\text{ml}$)			
Oct	139	128	109
Nov	80	53	56
FEP* ($\mu\text{g}/100\text{ml}$ RBC)	527	466	522
Peripheral nerve conduction	Results pending	Motor and Sensory Abnormalities	Normal

*Free erythrocyte protoporphyrin

Director, Thomas O. Vinson, MD, Director, DeKalb County Health Department; Thomas McKinley, Assistant Director, John McCroan, PhD, Director, Epidemiology Section, Georgia Department of Human Resources; and within CDC: the National Institute for Occupational Safety and Health; Toxicology Branch, Clinical Chemistry Division, Bureau of Laboratories; Environmental Hazards Activity, Cancer and Birth Defects Division, Microbiologic Control Branch, Bacterial Diseases Division, Bureau of Epidemiology.)

Editorial Note

This episode illustrates the potential health hazard posed by airborne lead in indoor firing ranges. Excessive lead absorption among firing range instructors has been noted several times previously (2, 3); in each instance range ventilation was shown to have been inadequate. It is important that blood lead levels and air lead levels in firing ranges be monitored in accordance with NIOSH standards; a range should be closed and the ventilation system corrected if blood lead levels ≥ 80 $\mu\text{g}/100\text{ml}$ or airborne lead levels $\geq 0.15\text{mg}/\text{m}^3$ are discovered during firing or bullet molding operations (1).

Evaluation of existing ventilation at the DeKalb County firing range indicated the need to increase air inflow approximately 6-fold to achieve reduction of airborne lead levels to meet NIOSH standards. Repair work to correct the range ventilation system is currently underway.

References

1. National Institute for Occupational Safety and Health: Criteria for a Recommended Standard—Occupational Exposure to Inorganic Lead. Washington, GPO, 1972
2. Design considerations for indoor firing ranges. Michigan's Occupational Health 7:1-3, 1962
3. National Institute for Occupational Safety and Health: Lead Exposures at an Indoor Firing Range. 30 Mar 1973 (Unpublished report from Industrial Hygiene Services Branch and Medical Services Branch)

Morbidity and Mortality



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WEEKLY
REPORT

For
Week Ending
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EPIDEMIOLOGIC NOTES AND REPORTS INFLUENZA — Hawaii

Sporadic cases of influenza-like disease associated with an increase in influenza isolates have been reported on the island of Oahu. All influenza isolates have been Type A. In addition, an outbreak of influenza-like illness occurred in mid-November on the island of Molokai. Approximately 20% of persons visiting the island clinic reported influenza-like disease.

Within the continental United States isolated cases of influenza have been reported during the month of November from California, District of Columbia, Florida, Georgia, North Carolina, Utah, and Virginia. All seroconversions and viral isolates have been Type A influenza virus.

(Reported by Paul G. Stevens, MD, M. Tottori, MD, Robert

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TABLE I. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES
(Cumulative totals include revised and delayed reports through previous weeks)

DISEASE	48th WEEK ENDING		MEDIAN 1969-1973	CUMULATIVE, FIRST 48 WEEKS		
	November 30, 1974	December 1, 1973		1974	1973	MEDIAN 1969-1973
Aseptic meningitis	45	60	91	2,961	4,441	4,441
Brucellosis	4	1	1	168	167	174
Chickenpox	1,816	1,345	—	111,349	153,624	—
Diphtheria	5	5	5	225	179	179
Encephalitis:						
Primary: Arthropod-borne and unspecified	14	17	31	991	1,434	1,427
Post-Infectious	2	4	4	237	259	280
Hepatitis, Viral:						
Type B	159	188	151	9,153	7,501	7,501
Type A	625	—	—	38,557	—	—
Type unspecified	103	1,080	1,080	7,623	47,821	50,537
Malaria	5	2	26	244	230	2,738
Measles (rubeola)	143	249	536	21,274	25,781	29,705
Meningococcal infections, total	20	21	32	1,250	1,254	2,056
Civilian	19	21	26	1,221	1,228	1,839
Military	1	—	3	29	26	217
Mumps	897	999	1,753	51,688	63,879	80,558
Pertussis	35	—	—	1,607	—	—
Rubella (German measles)	108	115	364	11,370	27,306	41,976
Tetanus	—	1	3	88	83	110
Tuberculosis, new active	517	589	—	28,089	28,742	—
Tularemia	1	—	3	133	149	144
Typhoid fever	6	3	9	395	611	353
Typhus, tick-borne (Rky. Mt. spotted fever)	3	4	2	752	626	447
Venereal Diseases:						
Gonorrhea	17,123	17,528	—	847,084	786,736	—
Syphilis, primary and secondary	424	498	—	23,134	22,982	—
Rabies in animals	35	57	57	2,703	3,139	3,139

TABLE II. NOTIFIABLE DISEASES OF LOW FREQUENCY

	Cum.		Cum.
Anthrax:	2	Poliomyelitis, total:	5
Botulism:	16	Paralytic:	5
Congenital rubella syndrome:	45	Psittacosis:	151
Leprosy: Calif. 2, V.I. 1.	89	Rabies in man:	—
Leptospirosis: Mo. 2	45	Trichinosis: Tex. 1.	94
Plague:	6	Typhus, murine:	24