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DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
CENTER FOR DISEASE CONTROL
ATLANTA, GEORGIA 30333

CDC--MOUNT ST. HELENS VOLCANO HEALTH REPORT #8

June 20, 1980

Hospital Emergency Room Visits and Hospital Admissions for Pulmonary Conditions, Washington, May 11-June 14, 1980.

This is an update of the surveillance tables which appeared in the CDC Mount St. Helens Volcano Health Report #6 covering hospital emergency room (ER) visits and hospital admissions in 21 Washington hospitals. A description of these hospitals and recorded levels of ashfall in the respective communities can be found in Report #6 (June 13, 1980).

Eastern Washington Hospitals

In Ritzville, Moses Lake, and Othello, the numbers of weekly pulmonary (including asthma, bronchitis, chronic obstructive pulmonary disease/emphysema, and pneumonia, but excluding upper respiratory infections, viral syndromes, and sore throat) ER visits and hospital admissions for the third and fourth post-eruption weeks (June 1-7 and June 8-14) appear to be comparable to those reported for the week before the May 18, 1980, eruption (Tables 1 and 2). However, in Yakima and Spokane, an apparent sustained increase in pulmonary ER visits--but not pulmonary admissions--is seen for the week of June 8-14.

Western Washington Hospitals

Except for a marked increase in Centralia, the other hospitals in western Washington reported small increases or no increase in pulmonary ER visits for the week of May 25-31 after the ashfall of May 25 (Table 3). The number of pulmonary ER visits appears to have returned to pre-eruption levels by the second week (June 1-7). Only 1 hospital (in Aberdeen) had an increase in reported pulmonary admissions for the 2 weeks (May 25-June 7) after the ashfall (Table 4).

The Eruption of Soufrière Volcano, St. Vincent, April-June 1979

The following brief account of this eruption has been prepared with the assistance of Xavier Leus, M.D. (WHO associate expert in epidemiology assigned to the WHO Caribbean Epidemiology Center--CAREC), who is currently visiting CDC. He and C. Michael West, M.D., went to the island of St. Vincent (population 100,000) during the recent eruption of Soufrière Volcano following a request for assistance to CAREC from the island's government. The main concerns at the time were the health needs of 13,000 people evacuated from the northern third of the island and the possibility of chemical pollution of the water supply due to the falling ash. In addition to a field surveillance system to monitor infectious disease, they were able to set up hospital-based surveillance for patients admitted with respiratory disease. Geological details of the eruption have been published (Shepherd JB, Aspinall WP, Rowley KC, Pereira J, Sigurdsson H, Fiske RS, Tomblin JF. The eruption of Soufrière volcano, St. Vincent April-June 1979. *Nature* 1979;282:24-8).

A series of strong vertical explosions between April 13 and 26 generated ashfalls which were rapidly eroded by wind and rain soon after deposition. During this period only 1 adult was admitted to the hospital with respiratory symptoms attributable to the ash; this man, who had remained in the evacuated area close to the mountain and had received a heavy exposure to volcanic products, was thought to be suffering from toxic pneumonitis and recovered rapidly on steroid treatment. A different picture emerged with children: 35 were admitted, most of whom were less than 2 years old, suffering from asthmatic bronchitis, defined as the presence of respiratory symptoms with bronchospasm on auscultation. All the patients recovered. As normal medical services were disrupted, there were no available figures for out-patient consultations. There

were few or no cases of diarrhea, skin or eye irritation, or psychiatric problems arising from the ashfall. Vented gases were not considered to have been a problem, and toxic contamination of water supplies was eventually ruled out.

The nature of the respirable ash from this eruption in comparison with that from Mount St. Helens is not known. However, children on St. Vincent may have received higher acute exposures than those in Washington State because many people were evacuees, the housing was more primitive, and the inhabitants may have been less inclined to stay indoors during the ashfalls. Closer scrutiny of data from the Moses Lake questionnaire survey (see health report #7) does not identify any marked increase in ER visits or admissions to the hospital of infants as occurred on St. Vincent, though 4 children were admitted to the hospital, 2 with asthma and 2 with bronchitis, in the 2 weeks after the May 18 eruption compared with none in the 2 weeks preceding the eruption. As noted in health report #6 and in tables in the current issue, there was an overall increase in ER visits for respiratory conditions in Moses Lake following the eruption. The most notable increase in ER visits was of adults (15-64 years) suffering from asthma, 8 cases in the 2 weeks after the eruption compared with 1 in the preceding 2 weeks. These figures await further confirmation, but are suggestive of an effect of inhaled ash on airways function.

Until further studies have been completed, these (unpublished) findings at the Soufriere eruption are indicative of the continuing need to minimize exposure to ash, particularly for infants.

We would welcome any other reports of health effects associated with volcanic eruptions.

Preliminary Data on Pulmonary Problems in Heavy Ashfall Areas

More detailed data related to the previously reported increases in ER visits and hospital admissions for pulmonary problems in heavy ashfall areas are being accumulated. The initial review of ER records in Chehalis and Moses Lake and of hospital admissions in Moses Lake suggests that the increases were primarily for the diagnostic categories of bronchitis and asthma. It does not appear that there are major shifts in age and sex distribution before and after the eruptions (increases were apparent for children as well as adults, with more cases in females than males in both time periods). Based on very brief descriptions of occupation in the medical records it does not appear that a sizeable proportion of these increased pulmonary ER visits and hospital admissions were of cleanup workers. These preliminary data are based at this point on very small numbers; more detailed information is being analyzed, and results will be reported in future issues.

Meeting in Seattle to Discuss Sampling Methods

Between 30 and 40 representatives of government agencies and universities involved in ash sampling and analysis met to exchange information in Seattle yesterday, June 19, at the invitation of CDC and EPA. A further meeting to discuss analytical methods is scheduled for the coming week. Charles L. Geraci, Jr., Ph.D., of the Measurement Support Branch, Division of Physical Sciences and Engineering, NIOSH, CDC, is coordinating information on sampling and analytical procedures for CDC.

CDC--Mount St. Helens Volcano Health Reports are now being issued on a twice-a-week basis (Tuesdays and Fridays). Information in these reports represents the latest data reported to CDC; much of the information is preliminary in nature and subject to confirmation and change. It is distributed for the purpose of

Table 2 - Weekly Admissions for Hospitals in Eastern Washington, May 11 - June 14, 1980

LOCATION	ADMISSIONS	May 11-17	May 18-24*	May 25-31	June 1-7	June 8-14
Ritzville	Total	6	25	10	8	4
	Pulmonary	2	13	1	1	1
	Other	4	12	9	7	3
Moses Lake	Total	67	41	45	50	52
	Pulmonary	3	5	7	1	5
	Other	64	36	38	49	47
Othello	Total	36	38	32	35	21
	Pulmonary	9	17	4	6	2
	Other	27	21	28	29	19
Yakima 1	Total	195	177	177	207	237
	Pulmonary	8	19	12	13	10
	Other	187	158	165	194	227
Yakima 2	Total	288	237	248	273	289
	Pulmonary	7	14	7	8	6
	Other	281	223	241	265	283
Pullman	Total	42	58	38	56	47
	Pulmonary	2	1	4	2	0
	Other	40	57	34	54	47
Soap Lake	Total	9	2	6	6	3
	Pulmonary	0	0	1	1	0
	Other	9	2	5	5	3
Ellensburg	Total	21	36	21	36	20
	Pulmonary	1	5	4	5	4
	Other	20	31	17	31	16
Ephrata	Total	24	12	24	21	32
	Pulmonary	3	1	5	0	6
	Other	21	11	19	21	26
Spokane 1	Total	316	266	301	384	NA†
	Pulmonary	9	17	14	9	NA
	Other	307	249	287	375	NA
Spokane 2	Total	NA	NA	NA	NA	NA
	Pulmonary	NA	NA	NA	NA	NA
	Other	NA	NA	NA	NA	NA

* First volcanic eruption with ashfall - May 18, 1980

† NA = not yet available

Table 3 - Weekly Emergency Room (ER) Visits for Hospitals in Western Washington,
May 11 - June 14, 1980

LOCATION	ER VISITS	May 11-17	May 18-24	May 25-31*	June 1-7	June 8-14
Centralia	Total	239	256	276	201	NA†
	Pulmonary	11	17	44	21	NA
	Other	228	239	232	180	NA
Chehalis	Total	152	153	139	116	98
	Pulmonary	8	14	18	12	4
	Other	144	139	121	104	94
Longview 1	Total	443	448	430	383	455
	Pulmonary	41	30	53	38	44
	Other	402	418	377	345	411
Longview 2	Total	240	267	181	173	202
	Pulmonary	21	24	32	13	9
	Other	219	243	149	160	193
Aberdeen 1	Total	483	475	380	NA	NA
	Pulmonary	31	36	47	NA	NA
	Other	452	439	333	NA	NA
Aberdeen 2	Total	354	292	320	220	328
	Pulmonary	45	41	48	44	52
	Other	309	251	272	176	276
McCleary	Total	60	52	50	42	38
	Pulmonary	9	6	7	5	3
	Other	51	46	43	37	35
Shelton	Total	211	300	293	240	NA
	Pulmonary	10	5	13	6	NA
	Other	201	295	280	234	NA
Vancouver 1	Total	NA	NA	NA	NA	NA
	Pulmonary	NA	NA	NA	NA	NA
	Other	NA	NA	NA	NA	NA
Vancouver 2	Other	NA	NA	NA	NA	NA
	Pulmonary	NA	NA	NA	NA	NA
	Other	NA	NA	NA	NA	NA

* Second volcanic eruption with ashfall - May 25, 1980

† NA = not yet available

providing up-to-date health data from CDC and the many other groups involved in public health assessment. We hope to continue to receive relevant reports and data from others working on this problem.

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State	Year	Other	Pulmonary	Total
Alabama	1970	10	10	20
Alabama	1971	10	10	20
Alabama	1972	10	10	20
Alabama	1973	10	10	20
Alabama	1974	10	10	20
Alabama	1975	10	10	20
Alabama	1976	10	10	20
Alabama	1977	10	10	20
Alabama	1978	10	10	20
Alabama	1979	10	10	20
Alabama	1980	10	10	20
Alabama	1981	10	10	20
Alabama	1982	10	10	20
Alabama	1983	10	10	20
Alabama	1984	10	10	20
Alabama	1985	10	10	20
Alabama	1986	10	10	20
Alabama	1987	10	10	20
Alabama	1988	10	10	20
Alabama	1989	10	10	20
Alabama	1990	10	10	20
Alabama	1991	10	10	20
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Alabama	2011	10	10	20
Alabama	2012	10	10	20
Alabama	2013	10	10	20
Alabama	2014	10	10	20
Alabama	2015	10	10	20
Alabama	2016	10	10	20
Alabama	2017	10	10	20
Alabama	2018	10	10	20
Alabama	2019	10	10	20
Alabama	2020	10	10	20
Alabama	2021	10	10	20
Alabama	2022	10	10	20
Alabama	2023	10	10	20
Alabama	2024	10	10	20
Alabama	2025	10	10	20
Alabama	2026	10	10	20
Alabama	2027	10	10	20
Alabama	2028	10	10	20
Alabama	2029	10	10	20
Alabama	2030	10	10	20

* First volcanic eruption with ashfall - May 18, 1980
 NA - Not yet available

Table 1 - Weekly Emergency Room (ER) Visits for Hospitals in Eastern Washington,
May 11 - June 14, 1980

<u>LOCATION</u>	<u>ER VISITS</u>	<u>May 11-17</u>	<u>May 18-24*</u>	<u>May 25-31</u>	<u>June 1-7</u>	<u>June 8-14</u>
Ritzville	Total	45	96	67	32	31
	Pulmonary	1	34	7	3	0
	Other	44	62	60	29	31
Moses Lake	Total	220	300	225	168	203
	Pulmonary	8	21	12	6	8
	Other	212	279	213	162	195
Othello	Total	108	99	105	88	95
	Pulmonary	10	21	12	5	6
	Other	98	78	93	83	89
Yakima 1	Total	573	628	562	606	653
	Pulmonary	36	89	58	70	60
	Other	537	539	504	536	593
Yakima 2	Total	542	512	492	564	572
	Pulmonary	13	61	41	31	42
	Other	529	451	451	533	530
Pullman	Total	42	41	46	48	54
	Pulmonary	3	4	5	4	4
	Other	39	37	41	44	50
Soap Lake	Total	27	31	21	10	17
	Pulmonary	1	2	0	1	0
	Other	26	29	21	9	17
Ellensburg	Total	87	82	99	87	81
	Pulmonary	4	8	5	8	5
	Other	83	74	94	79	76
Ephrata	Total	47	32	33	38	47
	Pulmonary	6	10	5	5	4
	Other	41	22	28	33	43
Spokane 1	Total	488	550	542	488	NA†
	Pulmonary	NA	47	23	28	NA
	Other	NA	503	519	460	NA
Spokane 2	Total	438	529	496	472	NA
	Pulmonary	15	55	61	45	NA
	Other	423	474	435	427	NA

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† NA = Not yet available

Table 4 - Weekly Admissions for Hospitals in Western Washington, May 11 - June 14, 1980

LOCATION	ADMISSIONS	May 11-17	May 18-24	May 25-31*	June 1-7	June 8-14
Centralia	Total	77	70	66	67	NA†
	Pulmonary	5	4	6	0	NA
	Other	72	66	60	67	NA
Chehalis	Total	68	63	45	42	55
	Pulmonary	1	3	3	5	3
	Other	67	60	42	37	52
Longview 1	Total	166	169	139	156	192
	Pulmonary	21	10	17	13	14
	Other	145	159	122	143	178
Longview 2	Total	100	92	85	121	159
	Pulmonary	10	4	8	3	2
	Other	90	88	77	118	157
Aberdeen 1	Total	104	107	91	96	NA
	Pulmonary	4	5	12	10	NA
	Other	100	102	79	86	NA
Aberdeen 2	Total	54	46	41	34	39
	Pulmonary	6	7	7	10	5
	Other	48	39	34	24	34
McCleary	Total	8	18	13	12	12
	Pulmonary	1	0	5	1	3
	Other	7	18	8	11	9
Shelton	Total	42	45	52	58	66
	Pulmonary	5	4	1	3	4
	Other	37	41	51	55	62
Vancouver 1	Total	NA	NA	NA	NA	NA
	Pulmonary	NA	NA	NA	NA	NA
	Other	NA	NA	NA	NA	NA
Vancouver 2	Total	NA	NA	NA	NA	NA
	Pulmonary	NA	NA	NA	NA	NA
	Other	NA	NA	NA	NA	NA

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