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

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CDC--MOUNT ST. HELENS VOLCANO HEALTH REPORT #19

August 22, 1980

CDC Hospital Surveillance

Hospital Emergency Room Visits in Portland, Oregon,

April 6-July 5, 1980

Portland, Oregon, received only a light dusting of volcanic ash after the second major eruption on May 25, 1980, but about 1/4-1/2 inch of ash fell in Portland after the third major eruption on June 12. 1980. Because it rained heavily during the ashfall after this third eruption, the total suspended particulates (TSP) did not peak until several days after the eruption when the ash dried and became resuspended (CDC--Mount St. Helens Volcano Health Report #14, July 18, 1980).

Preliminary data are available on emergency room (ER) visits for 1 hospital in Portland for the period April 6-July 5, 1980. This hospital allocates patients to an "acute" or a "non-acute" ER depending on the severity of their patient's condition. The numbers of visits for some respiratory and eye diagnoses to these 2 emergency rooms are shown in Tables 1 and 2.

Respiratory Problems

Beginning the week after the May 25 eruption (June 1-7, 1980), and especially the 2 weeks after the June 12 ashfall (June 15-28, 1980), there is an apparent increase in the number of visits to the acute ER by patients with diagnoses of asthma, reactive airway disease (see discussion below), and wheezing/shortness of breath. Also, more patients with asthma visited the non-acute ER. However, there was little or no increase in the number of visits for chronic bronchitis/chronic obstructive pulmonary disease (COPD), acute bronchitis, or hyperventilation to either the acute or non-acute ER in this period.

Eye Problems

In the week following the June 12 ashfall (June 15-21, 1980), there was an increase in the number of visits to the acute ER for foreign bodies and conjunctivitis, but not for corneal abrasion/ irritation. There was little or no increase in the number of visits to the non-acute ER for these problems. Discussion

As did other hospitals in areas of Washington with moderate to heavy ashfall (CDC--Mount St. Helens Volcano Health Report #14, July 18, 1980), this hospital in Portland had a transient increase in the number of visits to the ER by patients with asthma and with what could be described as airway irritation. The largest increases in numbers of visits to the ER were for reactive airway disease and wheezing/ shortness of breath. Reactive airway disease refers to a condition of reversible airway obstruction characterized by wheezing

when exposed to an irritant or allergen. These patients might have been diagnosed as having "bronchial irritation," "bronchospasm," or "bronchitis" in other hospitals.

The increase in the number of visits to the non-acute ER by patients with asthma suggests that they went to the ER for psychological or other reasons. However, there was a real increase in the number of visits to the acute ER by patients with asthma who had respiratory signs and symptoms requiring treatment.

Although there was an increase in the number of visits to the ER for foreign bodies and conjunctivitis but not for corneal abrasion, some of these eye problems may prove to be ash-related (CDC--Mount St. Helens Volcano Health Report #18, August 15, 1980). Table 1 Visits for Selected Respiratory and Eye Diagnoses to an "Acute" Hospital ER in Portland, Oregon

		A	pril		May				June					
	6-12	13-19	20-26	27-May 3	4-10	11-17	18-24	25-31*	1-7	8-14	15-21	22-28	29-July 5	
RESPIRATORY									io.					
Asthma	5	4	5	6	9	4	4	7	9	9	11	16	13	
Chronic bronchitis/COPD	2	0	1	1	3	0	2	3	3	2	1	2	3	
Reactive airway disease	0	0	0	0	1	0	0	1	2	4	4	3	0	
Bronchitis, acute	3	2	2	4	0	1	2	4	0	1	3	1	3	
Wheezing/shortness														
of breath	0	1	0	0	1	0	1	1	3	6	2	8	4	
Hyperventilation	0	3	0	2	3	0	2	1	4	0	0	0	0	
SUBTOTAL	10	10	8	13	17	5	11	17	21	22	21	30	23	
EYE														
Foreign body	4	7	11	3	7	2	9	4	8	14	16	6	10	
Corneal abrasion/														
irritation	7	9	7	7	8	15	7	9	15	7	12	13	3	
Conjunctivitis	3	2	4	4	4	4	4	5	3	7	9	3	3	
SUBTOTAL	14	18	22	14	19	21	20	18	26	28	37	22	16	

*Second major eruption on May 25, 1980, resulted in only a light dusting of ash in Portland. †Third major eruption on June 12, 1980, resulted in 1/4-1/2 inch of ashfall in Portland.

	April				Мау				June					
	6-12	13-19	20-26	27-May 3	4-10	11-17	18-24	25-31*	1-7	8-141	15-21	22-28	29-July 5	
RESPIRATORY														
Asthma	1	2	0	0	1	0	3	1	0	4	3	3	2	
Chronic bronchitis/COPD	0	0	1	0	0	1	0	0	0	0	0	0	2	
Reactive airway disease	1	1	0	0	0	0	0	. 1	. 1	0	1	0	0	
Bronchitis, acute	18	13	9	14	5	12	15	13	14	7 '	11	15	14	
Wheezing/shortness														
of breath	0	0	· 1	0	0	0	0	1	0	0	0	0	0	
Hyperventilation	0	1	0	0	0	0	0	1	0	1	0	0	0	
SUBTOTAL	20	17	11	14	6	13	18	17	15	12	15	18	18	
EYE														
Foreign body	0	0	0	0	1	0	0	0	0	0	0	0	0	
Corneal abrasion/														
irritation	0	0	0	1	0	0	0	0	1	0	0	0	1	
Conjunctivitis	6	3	2	1	4	3	7	1	5	8	4	5	1	
SUBTOTAL	6	3	2	2	5	3	7	1	6	8	4	5	2	

Table 2. Visits for Selected Respiratory and Eye Diagnoses to a "Non-Acute" Hospital ER in Portland, Oregon

*Second major eruption on May 25, 1980 resulted in only a light dusting of ash in Portland. †Third major eruption on June 12, 1980 resulted in 1/4-1/2 inch of ashfall in Portland.

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Casualties

In the Area of the Volcano

Preliminary findings on deaths resulting from the May 18, 1980, Mount St. Helens eruption were reported in the CDC--Mount St. Helens Volcano Health Report #10, June 27, 1980. Currently, bodies of 29 persons have been recovered. Two persons were rescued who later died of burn complications, and 32 persons are still listed as missing by the Washington Department of Emergency Services. Some of the missing were known to have been near Spirit Lake, an area affected by mudflow, pyroclastic flow, and heavy ashfall. The heavy deposits of ash and debris make recovery of bodies in this area very difficult. The locations of bodies and of survivors after the May 18 eruption are shown in Figure 1.

Survivors are defined as persons within approximately 5 miles of Mount St. Helens or areas affected by tree destruction during the May 18 eruption. Survivors were interviewed to determine their exact locations during the initial blast, to obtain accounts of their experience, and to identify any injuries or illnesses resulting from the eruption (CDC--Mount St. Helens Volcano Health Report #15, July 25, 1980). Although 100 persons met the criterion for survivor (CDC--Mount St. Helens Volcano Health Report #16, August 1, 1980), only 53 of them were within 1 mile of the tree destruction zone. Most of the other 47 were located several miles southwest to southeast of the volcano in areas away from the northerly direction of the lateral blast (Figure 1).

In the Blast Area

No bodies have been recovered in this somewhat arbitrarily defined zone of most severe destruction immediately to the north of Mount St. Helens. Parts of this area are covered with heavy mudflow. In the Tree Blowdown Area

In this large area (almost 20 miles east to west and up to 12-13 miles north to south) where trees in a dense forest were toppled by the lateral blast, 25 bodies have been found. Two survivors also found in this area later died of burn injuries and complications. The causes of death include trauma (6), asphyxia from smoke and ash inhalation (16), and severe burns (3).

Deaths from physical trauma resulted from severe blast (1), a fall (1), flying rock (1), and falling trees (3). The person killed by the rock was inside his automobile. Of the 15 who died from as-physia and ash inhalation, 7 were inside vehicles, 4 were adjacent to vehicles, and 4 were not near vehicles.

Eleven survivors, all of whom were at the edge of the tree blowdown area, sustained fracture (1), third degree burns (2), second degree burns (2), or were unharmed (6) except for possible ash inhalation. Only 3 of them (2 of whom had second degree burns) were inside a vehicle.

In the Tree Destruction Area

Two bodies were recovered in this outer zone where the trees died but remained standing after the May 18 blast. One person found inside his vehicle had died of asphyxia, and the other person had burns from what might have been a gasoline fire.

Two of 6 survivors in this area were not under shelter and suffered second to third degree burns, even though they were over 15 miles northeast of the volcano. The other 4 survivors escaped unharmed in cars.

Within 1 Mile of Tree Destruction

Two persons had died from asphyxia and ash inhalation in and beside a car over 15 miles from the mountain. None of the 36 survivors suffered any serious injuries; 32 of them were able to escape in their vehicles.

NOTE - The data presented here can only be considered as preliminary; much remains unavailable or requires confirmation at this time. However, available data suggest that the deaths and injuries occurred primarily in tree blowdown and tree destruction areas. Enclosed vehicles may have protected some of the survivors against burns and flying debris and allowed them to escape with few or no injuries. Some of the deaths from asphyxia and ash inhalation might have been prevented by use of adequate masks or respirators. It should be reemphasized (CDC--Mount St. Helens Volcano Health Report #16, August 16, 1980) that persons should stay away from an active volcano. Anyone who must be in the vicinity of an active volcano should be familiar with the area, have planned escape routes, and stay near a vehicle. All such persons should also have respiratory protective devices with them at all times.

<u>CDC--Mount St. Helens Volcano Health Reports</u> will be published once a week until further notice. 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 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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