

MOUNT ST. HELENS TECHNICAL INFORMATION NETWORK

tederal emergency management agency

BULLETIN # 1 - "The Nature of Mount St. Helen's Ash"

The ash erupted from Mount St. Helens volcano on May 18 generally has a chemical composition similar to a common volcanic rock called dacite. The ash is composed of tiny fragments of pumiceous glass and crystals from the molten magma plus fragments of older rock torm off the walls of the vent. The nature of the ash deposited at any particular location depends on the wind patterns prevailing at the time the material was ejected and the distance downwind from the volcano. The composition of the material being ejected changed somewhat during the course of the eruption.

Over much of eastern Washington, where the ash had not been disturbed by the wind, erosion, or excavation, a distinct layering within the ash blanket was observed by geologists studying the ash. While subtle variations are present, depending on both details of the eruption and wind patterns in general, three main layers have been described. The bottom layer, erupted first from the volcano, is a dark grey ash composed of tiny fragments of older rocks and crystal fragments. The middle layer is composed of a mixture of pumice and crystal fragments. The top layer, forming the bulk of the ash over much of eastern Washington and Idaho, is a light grey ash mainly composed of fine particles of volcanic glass and crystals. Because smaller particles could be carried further from the volcano by the wind, the ash fallout at greater distances is composed of finer material.

Chemical analyses of the bulk ash will vary somewhat depending on the character of the ash at the sampling site. Care must be exerted in sampling to assure that other material, such as dirt or non-volcanic debris, have not been worked into the ash.

Not enough analyses of the ash have yet been performed to enable predictions of possible long-term effects on health and environment. However, enough information is available to indicate that two problems, sometimes associated with other volcanic eruptions around the world, are not present.

- (1) Acidity of rain, streams, and lakes caused by the presence of the ash is generally not beyond normal range.
- (2) Analyses to date indicate that the ash from Mt. St. Helens carries only smaller amounts of fluoride, so that the amount leached from the ash is not significantly greater than the fluoride content of some city water supplies.

principal unresolved characteristics of the ash which may be important from the point of view of long-term effects on health and environment are: analysis of the size characteristics of the ash particles, analysis of the amount of free silica in the ash, and analysis of the biologically available trace elements in the ash. These analyses are now underway in several laboratories around the state and elsewhere.

A team from the Center for Disease Control in Atlanta, Georgia and the National Institute for Occupational Safety and Health has arrived in Washington state and is developing plans for studying the health effects of the ash. Their plans tentatively include review of chemical analyses of ash, the surveillance of hospital admissions and environmental measurements during ash cleanup operations.

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^{*} Compiled from information supplied by the U.S. Geological Survey and other sources.