Annex 6: Volcanic Ash

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Introduction:

Primary Agency: Unified Command

Support Agencies:

- Absarokee Fire Department (FD)
- Columbus FD
- Molt Fire FD
- Nye FD
- Park City FD
- Rapelje FD
- Reed Point FD
- Stillwater County Disaster and Emergency Services
- Stillwater County Fire Warden
- Law Enforcement Agencies
- City/County 911 Dispatch Center
- Emergency Medical Services
- Public Works Agencies
- Public Health Agencies
- Montana DOT
- Montana Highway Patrol
- Montana National Guard
- Montana DES
- National Weather Service
- American Red Cross of Montana

Purpose

The purpose of this plan is to outline the procedures, services, and response actions to be used by local agencies during a volcanic ash incident.

Situation & Assumptions

A. Situation

1. The volcanic eruption of Mt. St. Helens May 18, 1980, as well as continuing volcanic and seismic activity in places as nearby as Yellowstone National Park has made the threat of future volcanic eruptions that could affect Montana and Stillwater County a reality. With proper wind

currents, a major eruption on either Mt. St. Helens or Mt. Hood could cause a sizeable amount of ash to fall in our area and create a significant threat to the health and safety of every citizen in the County.

2. Volcanic ash is pulverized rock. It often contains small pieces of light, expanded lava called pumice or cinders. Although gases are usually too diluted to constitute danger to the average person, the combination of acidic gas and ash which may be present within many miles of an eruption could cause lung damage to small infants, the very old and infirmed, or those already suffering from severe respiratory illness.

3. Volcanic eruptions are often accompanied by seismic activity and electrical storms. Responding to and recovering from such an incident would require a concerted effort on the part of the county and all of its emergency response agencies.

B. Assumptions

1. None identified.

Concept of Operations

General

The Town of Columbus/Stillwater County is committed to a proactive public information program during a disaster or emergency.

Notification to citizens will be made as soon as possible via the automated Emergency Alert System (EAS), the "E 911" system, mobile PA systems, and local radio/TV broadcasts. The DESC or his deputy will activate the EAS by contacting the **NWS (1-800-240-4596)** to initiate a public broadcast message

- **EAS (Emergency Alert System)**: The Emergency Alert System has replaced the Emergency Broadcast System as the primary digitized warning system for south central, south east Montana and Sheridan County Wyoming. The system is designed to provide a 24-hour warning point to the public for emergencies and disasters. KEMC Radio Station (91.7 FM) is the primary station, with simulcast capability to the other participating local stations: KCTR, KBLG, KULR-TV and KTVQ-TV. KEMC and the local dispatch center have generators, to enable broadcasting during power outages. This makes it essential for people to have battery-powered radios to receive these important messages during times of emergency.

  At the earliest convenience, updates and important information will also be placed on the relevant City and County websites (Public Safety, Public Health, etc.)

- Stillwater County public information and education programs will:

1. Provide support during the four phases of emergency management: mitigation, preparedness, response, and recovery operations.

2. Provide the public with accurate, timely, and easily understood event-related information concerning protective actions, route restrictions, health notices, and emergency assistance information.

3. Control rumors.

4. Coordinate information releases with all participating public and private agencies, emergency responders, and all levels of government to support public officials and media representatives in satisfying the public's demand for accurate and consistent information.

5. Limit public information activities to County-specific events and actions. Federal and State governments are responsible for information related to their jurisdictions.

6. Include provision of materials to the visually and hearing impaired, and non-English speaking persons.

- The County's Incident Command System (ICS), Emergency Operations Center (EOC), and Joint Information Center (JIC) will support public information.

- The County DES PIO or an alternate may serve as spokesperson for the EOC and Incident Commander (IC) during an emergency situation. Organizations not represented by the EOC may use their own PIO but should try to coordinate their media releases with the PIO as appropriate to avoid confusion among the public.

- The DES PIO will issue news releases on behalf of the county after coordinating current information with other agencies. Member(s) of the EOC will receive copies of all releases. EOC and/or IC approval is required before issuing policy-related news releases. Copies of releases will be sent to cooperating partners.

B. Direction & Control

♦ See the Alert and Warning Annex in Section II: Functional Annexes.

♦ The Incident Command System will be implemented at all incidents.

♦ Unified Command may be established among agencies or affected neighboring jurisdictions in order to assure more efficient management of scarce resources. In this event, the local Command and General Staff may co-locate with other neighboring jurisdictions in the best surviving facility. On-scene control will be delegated to the Operations Section Chief or to an on-scene Incident Commander.

♦ Incident Command:

a. **Response**: **Unified Command** is recommended. Representatives may include: LE, Fire, PW, PH, DESC, and CEOs.

b. **Recovery**: Senior **Public Works** official or designee.
*Unified Command (*suggested*): PW, PH, DESC, NGOs

♦ The Incident Commander will establish an Incident Command Post (ICP) as soon as possible and ensure that the location of the ICP and identity of the IC is disseminated to all responders.

♦ The IC will adapt the management structure to reflect the need and complexity of the incident. In accordance with other annexes, this may include, but is not limited to activating the EOC, establishing unified command, and requesting mutual aid support from neighboring jurisdictions.

♦ All information releases should be coordinated with the IC, the DES Coordinator (DESC) and the Chief Elected Officials (CEOs) (or designated representative) for approval prior to release to the public/media.

♦ News releases from other facilities, counties or state-level agencies should be coordinated with the appropriate public officials.

C. Operational Roles & Responsibilities

♦ American Red Cross (ARC)

- Set up shelters.
- Conduct a windshield damage survey within the first 24 hours.
- Provide a locator service to answer inquiries about people in the disaster area.

♦ Chief Elected Officials

Declare an emergency and/or a disaster with up to a 2-mill levy, if appropriate. Separate declarations are required for each affected jurisdiction (County, Columbus.) A disaster declaration will allow a request to the MTDES for assistance.

♦ Coroner's Office:

The County Coroner's Office is the lead agency for the collection, storage, and disposition of all human remains and their personal effects.

♦ DES Coordinator (DESC)
Mitigation Phase

- Stress hazard awareness and personal preparedness in presentations with the media, schools and service clubs.

Preparedness Phase

- Review and update this annex.

Response Phase

- Inform the public through the EAS. Ensure that the EAS is not overly used to cause undue public concern.
- Consider activation of the EOC.
- Consider activation of volunteer organizations.
- Consider need for Emergency or Disaster declaration and begin process, if necessary.
- Establish and maintain reporting and coordination contact with cooperating jurisdictions, state and volunteer agencies until Liaison position is filled.
- Assist Incident Command and Command Staff as requested.
- Activate other annexes from this plan including but not limited to:
  .

  Public Information Annex

  Debris Management Annex

  Mass Care Annex

  Damage Assessment Annex

- Appoint a PIO. If the primary PIO is not available, the new PIO should be experienced in the roles & responsibilities of a Public Information Officer.
- Determine the need for and activate JIC.
- Maintain a unit log of major decisions and actions taken.

- Manage the EOC, advise the CEO's and support field operations.
- Provide public information if the PIO is not available.
- Ensure that damage assessment and major events are being recorded.
- Hold periodic briefings when necessary for the EOC staff to exchange information.
- Act as liaison with MTDES.

Recovery Phase

- Assist in assessment of damages.
- Provide coordination point for disaster recovery activities and agencies.
- Facilitate post-incident analysis.
- Revise and update emergency plans as incident analysis indicates.

♦ Emergency Medical Services (EMS): .
2 Level II Trauma Centers are located in Billings. They will take patients as Stillwater Community Hospital will quickly be overwhelmed. Emergency power is available.

♦ Fire Services:
County fire departments will fight fires, rescue victims, respond to hazardous materials incidents, provide emergency medical services, assist law enforcement with evacuation and assess damage. Damage reports will be reported to the EOC for collection and assessment.

♦ Law Enforcement:
Law Enforcement will be in charge of evacuation, perimeter security, and traffic control. Damage assessment will be reported to the EOC.

♦ Public Health:

- Coordinate air quality (AQ) monitoring.
- Identify sources of safe drinking water during disaster situations.
- Public health nurses assist the ARC at shelters.
- Inspect shelters for sanitary conditions, including food and water supplies, wastewater and garbage disposal.

- Conduct damage assessment in licensed food facilities for contamination and refrigeration failures.
- Provide information on probable sewage contamination, identifying sources for portable toilets when needed, and providing information on appropriate clean up.

♦ Public Works:
Mitigation Phase

- No identified actions.

Preparedness Phase
- Increase warehouse stock of items likely to be in demand.
- Evaluate fleet maintenance needs.
- Update resource lists.
- Establish interagency coordination communications plan.
- Provide public information regarding appropriate preparedness activities through the EOC PIO as appropriate.
- Participate in, and evaluate, exercises.

Response Phase
- Provide a representative to the Damage Assessment Group in the EOC.
- Conduct a windshield damage survey within the first 24 hours and more intensive assessments as able.
- Help with coordination to inspect priority buildings first, which are essential service, hospitals, nursing homes, and shelters. Damage assessment will be reported to the EOC. *See the Damage Assessment Annex for more information*.
- Assess the volcanic activity with respect to wind forecasts, ash volume expected, and damage to vehicles, the water supply, utility distribution systems, catch basins, storm drains and roadways. Keep EOC advised.
- Respond to and control the incident according to department SOP's.
- Assist LE with traffic control with the use of barriers and signs.

- Coordinate debris management, with an emphasis on roads that need to be cleared for emergency traffic.
- Coordinate inspections of pumps, valves, reservoirs, etc. as well as other utility system components as appropriate.

- Coordinate restoration of basic services. Repairs to water and sewer mains, streets and bridges will be made in order of priority.

- Identify needs for alternative water supplies, if necessary.

Recovery Phase

- Release excess personnel and equipment according to demobilization plan.

- Assist in the compilation of damage assessment of government owned equipment, utilities, roads, etc. to support request for federal disaster assistance.

- Assign personnel to monitor and direct the long-term recovery process.

- Complete required paperwork and reports.

  - ❑ Participate in post incident analysis.

  - ❑ Incorporate appropriate recommendations to revise the plan.

  - ❑ Release complete statistics on disaster damage, injuries and fatalities.

  - ❑ Provide the media information on the progress of recovery efforts.

D. Authorities and Limitations

♦ The Incident Commander (IC) has authority to coordinate the use of resources and personnel at the scene of the emergency.
♦ The Commissioners have the authority to declare a State of Emergency within their jurisdiction and the responsibility to request a state or federal declaration if appropriate.

♦ Commissioners have the authority to enter into mutual aid agreements between their jurisdictions and other jurisdictions.

♦ MCA 10-3-104 and 10-3-406 give the Governor and local chief elected officials the authority to "*direct and compel the evacuation of all or part of the population from an emergency or disaster area…..when necessary for the preservation of life or other disaster mitigation, response, or recovery*;" and to "*control the ingress and egress to and from an*

emergency or disaster area, the movement of persons within the area, and the occupancy of premises therein."

♦ Law Enforcement has the authority to order evacuations and close roads in emergent circumstances.

♦ The MTDOT and the Federal Highway Administration have the authority to close state and federal highways and bridge structures.

♦ County Health Officers have broad authority over matters of public health to include air and water quality concerns, food supplies, wastewater systems, and disease prevention.

♦ City officials have the authority to condemn a building in the city as unsafe to occupy.

E. Warning and Notification

1. See the Alert and Warning Annex in Section II: Functional Annexes.

2. Montana will be warned of an eruption through the National Attack Warning System (NAWAS) from the National Warning Center in Colorado Springs. The MT Dept. of Justice is the state warning point and will disseminate the NAWAS alert to local law enforcement. The message will announce the estimated time of arrival of the ash.

3. The DESC or his deputy will activate the EAS by contacting the **NWS (1-800-240-4596)** to initiate the message. If phones are down, a message may be hand delivered to the primary EAS station, KEMC, at 1500 University Drive, Billings or to the National Weather Service 2170 Overland Ave, Billings. Radio and TV stations will copy the message and interrupt regular programming for the broadcast.

4. If communications are down, the most logical source of communications will be the local ARES organization, which is able to provide portable and self-sustained Ham radio communication that can link critical sites such as the EOC, shelters, hospitals and others that may be needed.

5. Eruptions may occur without warning. Follow-up confirmation will likely be received first through the 911 center and the media. The jurisdiction will also be inundated by the public with information on damage and life/safety concerns. The IAP must address facilitating and verifying those reports and requests.

F. Public Information

♦ Providing Information to the Public

- See the Public Information Annex in Section II: Functional Annexes

- The EOC will be responsible for all emergency public education and information.

- Once appointed, the Public Information Officer (PIO) will be responsible for public coordination and dissemination during the emergency and will clear all press releases through the Incident Commander or DESC. All approved press releases will be logged and a copy saved for the disaster records.

- During the event, the PIO, in conjunction with the IC, will continue to provide pertinent information over radio and TV. The public will be reminded to remain calm, stay tuned for more information, and to follow the instructions of emergency management personnel. Such instruction may include guidelines for ash removal and disposal, the use of masks to protect the respiratory system, how to keep vehicles running, turning to homes, shelter accommodations, sanitation, and where and how to report damages.

- The normal alert and warning systems may be down or limited. It may be necessary to augment these systems with mobile public address systems, door-to-door contact, and posting notices on bulletin boards in designated public gathering places such as shelters.

- The PIO may also participate in a Joint Information Center (JIC), staffed by PIOs from various jurisdictions, to address the media with a single, coordinated voice. (see *Public Information Annex)*

♦ Receiving Information from the Public

Providing adequate communications means to receive information from the public, such as damage reports, sanitation problems, health issues, offers for donated goods, and other public safety-related problems, is the responsibility of the Communications Unit Leader and the PIO. This will probably be done by staffing public information lines and publishing the telephone number through the local media. The PIO must also ensure the information received is communicated to the appropriate EOC section to deal with it.

G. Considerations and Implementation Responsibilities

As demonstrated by the 1980 eruption of Mt. St. Helens, ash can cause flooding, mudslides, equipment failure, respiratory health problems, as well as a huge ash removal project. The following are some considerations when planning for a Volcanic Ash Incident.

♦ Ash Removal

If ash build up is such that it impairs traffic flow, response capability, endangers the environment, or the aesthetics of public property, the jurisdiction will give consideration to a removal process. Collection points may need to be set up pending determination of a final disposal location. *(see Debris Management Annex)*

♦ Damage Assessment & Incident Stabilization:
Damage assessment will take place in two phases: 1) the initial assessment, to determine general impact and damage to vital facilities and resources, and provide a brief overview of impact on citizens and businesses; and 2) subsequent, in-depth, assessments to determine the full extent of damage and the financial implications for disaster declarations and disaster assistance. Priorities in the initial assessment will be the restoration of emergency response and direction and control capability, and the saving of lives. (*see Damage Assessment Annex)*

♦ Disruption of Water Supply
Should a volcanic eruption cause a disruption in the water supply, Public Works will attempt to provide some water. The water system has connections and agreements in place for emergency purposes. It may be necessary to procure alternative supplies through the use of potable watertankers, and/or order mandatory reductions in use. The EOC may have to request emergency supplies through the State DES or National Guard.

♦ Earthquakes
Volcanic activity enhances the probability of an earthquake. If volcanic eruption occurs, it would be prudent to monitor seismic activity and keep in mind the threat of earthquake when planning.

♦ Electrical Storms
Electrical storms, an associated phenomenon of a volcanic plume, can cause fires as well as power outages. Depending on the time of year, the effect could be devastating. Either could require shelter and mass care be provided to a portion of our population. (*See Mass Care Annex)*.

♦ Equipment Failure
Mechanized equipment could easily fail due to ash clogging air and fuel filters. Non-operative emergency vehicles and other equipment could greatly impair response capability. Also, roads could become impassable with ash and broken down private vehicles further impairing response capability.

♦ Power Outages
Northwestern Energy, Beartooth Electric, MDU, and Yellowstone Electric will provide response to the loss of commercial power. Auxiliary power capabilities exist at the 911 Dispatch Center, the EOC, and hospital. Public Works also has access to portable generators.

♦ Respiratory Health Problems
Ash particles in the air can aggravate existing respiratory problems and cause problems for others. The EOC will cooperate with public health officials to disseminate regular warning information to the public and implement appropriate precautions for emergency workers and

assisting agencies and volunteers. Health warning hotlines may be established to provide the most up-to-date information.

H. Administration & Logistics

The County Public Information Officer is responsible for the acquisition of appropriate equipment and supplies to support the public information and education program, and to ensure rapid activation of the JIC if necessary.

Selection and training of persons to provide emergency information support services to the EOC and the JIC will be under the direct supervision of the DESC.

For more information call:
Montana State Disaster & Emergency Services Division at (406) 324-4777, or visit our website at: http://mt.gov/dma/des/default.asp
U.S. Geological Survey at (360) 993-8900, or visit our website at: http://vulcan.wr.usgs.gov/
Or call your local DES Office at 322-8054.

Appendix 6.1: Sample EAS Messages

EAS Message #l: Home Shelter

The following message has been released by the Emergency Operations Center:

1. The _____ has announced that an emergency presently exists at _____. Persons living or working within an approximate _____ mile radius of this location are requested to take sheltering actions.

2. There is no need for residents to leave the area in order to take sheltering action.

3. Persons who have taken shelter should observe the following procedures:

Close all doors and windows.

Disconnect air conditioners or fans.

Lower the thermostat setting of any heater or turn off air conditioner/evaporative cooler to minimize the intake of external air.

Keep pets inside, and to extent possible, bring farm animals under covered facilities.

4. People living, working or traveling in the following areas are affected by this request:

(Repeat the list of areas one time, and then continue the message.)

5. Persons living, working or traveling in this area should take sheltering action. Persons traveling to home or work should proceed to their destination in an orderly fashion obeying all traffic regulations. Non-residents traveling in motor vehicles should clear the area in an orderly fashion.

6. All persons traveling in the area in motor vehicles should roll up windows, close air vents, and turn off air conditioners. If in an automobile, or when sheltering is not immediately available, improvised respiratory protection may be taken. Place a handkerchief, towel, or other similar item snugly over the nose and mouth until indoor.

7. You are asked **not** to do the following:

(Read statement A., below, if school is in session.)

You are requested not to telephone or go to the school your children are attending. They are in a covered protected environment and will be bused home when it is safe to do so.

Do not telephone city, county, state or federal officials directly involved. They will keep you informed of the situation through this station. Do not use the telephone except for medical emergencies.

8. The preceding has been an announcement from the Stillwater County Emergency Operations Center. It calls for all persons living or working within a _____ mile radius of _____ to take shelter. For further information, stay tuned to this station.

(Thereafter, this message should be repeated as often as needed until the station is informed by the EOC to end transmission.)

EAS Message #2: Evacuation
The following message has been released by the Emergency Operations Center:

1. The Stillwater County Emergency Operations Center has announced that an emergency condition exists at _____ and recommends the evacuation of all persons living or working within an approximate _____ mile radius of this location.

2. This advisory affects persons living in the following area:

(Repeat the list of affected areas one time, and then continue the message.)

3. Please use the following evacuation routes for your neighborhood. If you will need a place to stay, report to the mass care center located at _____.

(Repeat the list of affected areas one time, and then continue the message.)

4. If you have housebound persons or invalids in your home and require assistance in moving them, contact the Stillwater County Emergency Operations Center at _____

5. Please cooperate by checking on persons who may live alone in your neighborhood. If they have no way of providing for their own transportation, please assist them if possible.

6. Persons affected by this evacuation advisory should prepare to spend a minimum of three days (72 hours) away from home and should have with them sufficient quantities of clothing, sleeping bags or blankets, personal care items and prescription drugs for at least this period. Persons evacuating to mass care centers will be provided with food and sanitary facilities. Pets will **not** be allowed inside the mass care centers.

7. Farmers/ranchers affected by this evacuation advisory should shelter their animals and contact the County agricultural extension agent at _____ for further instructions regarding protection of livestock, foodstuffs, and regaining access to the evacuated area.

8. Persons planning to evacuate are reminded to take the following steps prior to leaving:

Secure your home and property.

Turn off all lights and electrical appliances.

Turn down any heating systems (or turn off air conditioning systems).

Proceed calmly to your destination, obeying all traffic laws and driving carefully.

Please obey law enforcement officers and others who will be directing traffic along the evacuation routes.

9. The preceding has been an announcement from the Stillwater County Emergency Operations Center regarding recommendation by the _____ for the evacuation of all persons living within a _____ mile radius of _____. For further information, please stay tuned to this station.

(Thereafter, this message should be repeated as often as needed until the station is informed by the EOC to end transmission.)

EAS Message #3: School Evacuation

1. The following message has been released by the Stillwater County Emergency Operations Center. It supplements instructions given to the public concerning the evacuation announcement for an approximate _____ mile radius of _____.

2. Parents with children attending schools within a _____ mile radius of _____ are advised that their children are subject to a separate evacuation plan while school is in session. These schools are _____. Children at these schools will be taken directly to shelter areas. Parents are to meet their children at these shelter areas outside the emergency zone. ***I repeat***, *children will be taken directly to areas outside the risk area where parents are to meet their children*. Parents are not to report to their children's schools.

3. Children attending the schools in the risk area will be taken to the following areas where they may be picked up:

School: Evacuation Area:

(Repeat list one time and continue the message.)

4. Parents are urged not to telephone or to go to the schools their children attend. To do so will only create confusion. Parents are to meet their children at the previously announced evacuation areas. ***I repeat***, parents are urged **not** to telephone or to go to the schools that their children attend, but to meet their children at the evacuation areas.

5. The preceding has been an announcement from the Stillwater County Emergency Operations Center giving parents instructions on where to meet their children who are attending schools within an approximate _____ mile radius of _____.

(Repeat entire message one time.)

Appendix 6.2: Sheltering-in-Place

AMERICAN RED CROSS: FACT SHEET FOR CITIZENS

What Shelter-in-Place Means:

One of the instructions you may be given in an emergency where hazardous materials may have been released into the atmosphere is to shelter-in-place. This is a precaution aimed to keep you safe while remaining indoors. (This is not the same thing as going to a shelter in case of a storm.) Shelter-in-place means selecting a small, interior room, with no or few windows, and taking refuge there. It does not mean sealing off your entire home or office building. If you are told to shelter-in-place, follow the instructions provided in this Fact Sheet.

Why You Might Need to Shelter-in-Place:

Chemical, biological, or radiological contaminants may be released accidentally or intentionally into the environment. Should this occur, information will be provided by local authorities on television and radio stations on how to protect you and your family. Because information will most likely be provided on television and radio, it is important to keep a TV or radio on, even during the workday. The important thing is for you to follow instructions of local authorities and know what to do if they advise you to shelter-in-place.

How to Shelter-in-Place

At Home:

- Close and lock all windows and exterior doors.
- If you are told there is danger of explosion, close the window shades, blinds, or curtains.
- Turn off all fans, heating and air conditioning systems.
- Close the fireplace damper.
- Get your family disaster supplies kit and make sure the radio is working.
- Go to an interior room without windows that's above ground level. In the case of a chemical threat, an aboveground location is preferable because some chemicals are heavier than air, and may seep into basements even if the windows are closed.
- Bring your pets with you, and be sure to bring additional food and water supplies for them.
- It is ideal to have a hard-wired telephone in the room you select. Call your emergency contact and have the phone available if you need to report a life-threatening condition. Cellular telephone equipment may be overwhelmed or damaged during an emergency.
- Use duct tape and plastic sheeting (heavier than food wrap) to seal all cracks around the door and any vents into the room.
- Keep listening to your radio or television until you are told all is safe or you are told to evacuate. Local officials may call for evacuation in specific areas at greatest risk in your community.

At Work:

- Close the business.
- Bring everyone into the room(s). Shut and lock the door(s).
- If there are customers, clients, or visitors in the building, provide for their safety by asking them to stay – not leave. When authorities provide directions to shelter-in-place, they want everyone to take those steps now, where they are, and not drive or walk outdoors.
- Unless there is an imminent threat, ask employees, customers, clients, and visitors to call their emergency contact to let them know where they are and that they are safe.
- Turn on call-forwarding or alternative telephone answering systems or services. If the business has voice mail or an automated attendant, change the recording to indicate that the business is closed, and that staff and visitors are remaining in the building until authorities advise it is safe to leave.
- Close and lock all windows, exterior doors, and any other openings to the outside.
- If you are told there is danger of explosion, close the window shades, blinds, or curtains.
- Have employees familiar with your building's mechanical systems turn off all fans, heating and air conditioning systems. Some systems automatically provide for exchange of inside air with outside air – these systems, in particular, need to be turned off, sealed, or disabled.
- Gather essential disaster supplies, such as nonperishable food, bottled water, battery-powered radios, first aid supplies, flashlights, batteries, duct tape, plastic sheeting, and plastic garbage bags.
- Select interior room(s) above the ground floor, with the fewest windows or vents. The room(s) should have adequate space for everyone to be able to sit in. Avoid overcrowding by selecting several rooms if necessary. Large storage closets, utility rooms, pantries, copy and conference rooms without exterior windows will work well. Avoid selecting a room with mechanical equipment like ventilation blowers or pipes, because this equipment may not be able to be sealed from the outdoors.
- It is ideal to have a hard-wired telephone in the room(s) you select. Call emergency contacts and have the phone available if you need to report a life-threatening condition. Cellular telephone equipment may be overwhelmed or damaged during an emergency.
- Use duct tape and plastic sheeting (heavier than food wrap) to seal all cracks around the door(s) and any vents into the room.

- Write down the names of everyone in the room, and call your business' designated emergency contact to report who is in the room with you, and their affiliation with your business (employee, visitor, client, customer.)
- Keep listening to the radio or television until you are told all is safe or you are told to evacuate. Local officials may call for evacuation in specific areas at greatest risk in your community.

At School:
Close the school. Activate the school's emergency plan. Follow reverse evacuation procedures to bring students, faculty, and staff indoors.

- If there are visitors in the building, provide for their safety by asking them to stay – not leave. When authorities provide directions to shelter-in-place, they want everyone to take those steps now, where they are, and not drive or walk outdoors.

- Provide for answering telephone inquiries from concerned parents by having at least one telephone with the school's listed telephone number available in the room selected to provide shelter for the school secretary, or person designated to answer these calls. This room should also be sealed. There should be a way to communicate among all rooms where people are sheltering-in-place in the school.

- Ideally, provide for a way to make announcements over the school-wide public address system from the room where the top school official takes shelter.

- If children have cell phones, allow them to use them to call a parent or guardian to let them know that they have been asked to remain in school until further notice, and that they are safe.

- If the school has voice mail or an automated attendant, change the recording to indicate that the school is closed, students and staff are remaining in the building until authorities advise that it is safe to leave.

- Provide directions to close and lock all windows, exterior doors, and any other openings to the outside.

- If you are told there is danger of explosion, direct that window shades, blinds, or curtains be closed.

- Have employees familiar with your building's mechanical systems turn off all fans, heating and air conditioning systems. Some systems automatically provide for exchange of inside air with outside air – these systems, in particular, need to be turned off, sealed, or disabled.

- Gather essential disaster supplies, such as nonperishable food, bottled water, battery-powered radios, first aid supplies, flashlights, batteries, duct tape, plastic sheeting, and plastic garbage bags.

- Select interior room(s) above the ground floor, with the fewest windows or vents. The room(s) should have adequate space for everyone to be able to sit in. Avoid overcrowding by selecting several rooms if necessary. Classrooms may be used if there are no windows or the windows are sealed and cannot be opened. Large storage closets, utility rooms, meeting rooms, and even a gymnasium without exterior windows will also work well.

- It is ideal to have a hard-wired telephone in the room(s) you select. Call emergency contacts and have the phone available if you need to report a life-threatening condition. Cellular telephone equipment may be overwhelmed or damaged during an emergency.

- Bring everyone into the room. Shut and lock the door.

- Use duct tape and plastic sheeting (heavier than food wrap) to seal all cracks around the door(s) and any vents into the room.

- Write down the names of everyone in the room, and call your schools' designated emergency contact to report who is in the room with you.

- Listen for an official announcement from school officials via the public address system, and stay where you are until you are told all is safe or you are told to evacuate. Local officials may call for evacuation in specific areas at greatest risk in your community.

In Your Vehicle:
If you are driving a vehicle and hear advice to "shelter-in-place" on the radio, take these steps:

- If you are very close to home, your office, or a public building, go there immediately and go inside. Follow the shelter-in-place recommendations for the place you pick described above.

- If you are unable to get to a home or building quickly and safely, then pull over to the side of the road. Stop your vehicle in the safest place possible. If it is sunny outside, it is preferable to stop under a bridge or in a shady spot, to avoid being overheated.

- Turn off the engine. Close windows and vents.

- If possible, seal the heating/air conditioning vents with duct tape.

- Listen to the radio regularly for updated advice and instructions.

- Stay where you are until you are told it is safe to get back on the road. Be aware that some roads may be closed or traffic detoured. Follow the directions of law enforcement officials.

Local officials on the scene are the best source of information for your particular situation. Following their instructions during and after emergencies regarding sheltering, food, water, and clean up methods is your safest choice.

Remember that instructions to shelter-in-place are usually provided for durations of a few hours, not days or weeks. There is little danger that the room in which you are taking shelter will run out of oxygen and you will suffocate.

Appendix 6.3: Volcanic Ash Information Sheet

HAZARD

The volcanic ash fallout in Montana from the May 18, 1980 eruption of Mount St. Helens and the threat of more eruptions, has demonstrated a need for contingency planning with respect to volcanic ash fallout. This eruption has proven that Montana can receive considerable amounts of volcanic ash from the West Coast. This constitutes a definite threat to the public health and safety of every citizen in the County.

WHAT IS VOLCANIC ASH"

Volcanic ash is pulverized rock. It often contains small pieces of light, expanded lava called pumice or cinders. Although gases are usually too diluted to constitute danger to the average person, the combination of acidic gas and ash which may be present within a few miles of the eruption could cause lung damage to small infants, the very old and infirmed, or those already suffering from severe respiratory illness.

EFFECTS OF ASH FALLOUT:

1. A heavy ash fall blots out light. Sudden heavy demand for electric light may cause power supplies to "brown out" or fail.

2. Ash clogs watercourses, reservoirs, sewers, and machinery of all kinds.

3. Ash drifts onto roadways, railways, and runways like snow but resemble soft wet sand.

4. Fire ash may be slippery.

5. The weight of ash may cause roofs to collapse, tree branches to break, and power lines to come down.

CITIZEN INSTRUCTION IF VOLCANIC ASH IS FALLING:

1. Don't panic. Stay calm

2. Stay indoors.

3. If outside, seek shelter, (e.g. car, building) use a mask or dampened cloth over your mouth to breathe.

4. If at work, go home if possible, before the ash begins to fall. If the ash is falling stay indoors until the heavy ash has settled.

5. Go directly home, do not run errands.

6. Unless an emergency, do not use telephone

7. Use your radio for information

IF IN YOUR AUTO

1. Get vehicle inside, ash is abrasive.

2. Don't speed, and don't follow too closely behind other vehicles.

3. Change oil and filter right away, don't drive without an air filter.

Appendix 6.4: What To Do If A Volcano Erupts

Volcanic Ash fall - How to be Prepared for Ash fall

-- How to protect your home, car, children, and pets --

-- Washington State Military Department, Emergency Management Division, and the USGS Cascades Volcano Observatory, 1999

WHAT IS VOLCANIC ASH?

Volcanic ash is rock that has been pulverized into dust or sand by volcanic activity. In very large eruptions, ash is accompanied by rocks having the weight and density of hailstones. Volcanic ash is hot near the volcano, but it is cool when it falls at greater distances. Ash fall blocks sunlight, reducing visibility and sometimes causing darkness. Ash fall can be accompanied by lightning.

Fresh volcanic ash is gritty, abrasive, sometimes corrosive, and always unpleasant. Although ash is not highly toxic, it can trouble infants, the elderly and those with respiratory ailments. Small ash particles can abrade the front of the eye under windy and ashy conditions.

Ash abrades and jams machinery. It contaminates and clogs ventilation, water supplies and drains. Ash also causes electrical short circuits -- in transmission lines (especially when wet), in computers, and in microelectronic devices. Power often goes out during and after ash fall. Long-term exposure to wet ash can corrode metal.

Ash accumulates like heavy snowfall, but doesn't melt. The weight of ash can cause roofs to collapse. A one-inch layer of ash weighs 5-10 pounds per square foot when dry, but 10-15 pounds per square foot when wet. Wet ash is slippery. Ash resuspended by wind, and human activity can disrupt lives for months after an eruption.

WHAT TO DO IN CASE OF AN ASH FALL

GENERAL PRINCIPLES

- Know in advance what to expect and how to deal with it; that will make it manageable.
- In ashy areas, use dust masks and eye protection. If you don't have a dust mask, use a wet handkerchief.
- As much as possible, keep ash out of buildings, machinery, air and water supplies, downspouts, storm drains, etc.
- Stay indoors to minimize exposure -- especially if you have respiratory ailments.
- Minimize travel -- driving in ash is hazardous to you and your car.
- Don't tie up phone line with non-emergency calls.
- Use your radio for information on the ash fall.

WHAT TO DO BEFORE AN ASH FALL

Whether in a car, at home, at work or play, you should always be prepared. Intermittent ash fall and re-suspension of ash on the ground may continue for years.

YOUR HOME

Keep these items in your home in case of any natural hazards emergency:

- Extra dust masks.
- Enough non-perishable food for at least three days.
- Enough drinking water for at least three days (one gallon per person per day).
- Plastic wrap (to keep ash out of electronics).
- First aid kit and regular medications.
- Battery-operated radio with extra batteries.
- Lanterns or flashlights with extra batteries.
- Extra wood, if you have a fireplace or wood stove.
- Extra blankets and warm clothing.
- Cleaning supplies (broom, vacuum, shovels, etc.).
- Small amount of extra cash (ATM machines may not be working).

YOUR CHILDREN

- Explain what a volcano is and what they should expect and do if ash falls.
- Know your school's emergency plan.
- Have quiet games and activities available.

YOUR PETS

- Store extra food and drinking water.
- Keep extra medicine on hand.

- Keep your animals under cover, if possible.

YOUR CAR

Any vehicle can be considered a movable, second home. Always carry a few items in your vehicle in case of delays, emergencies, or mechanical failures.

- Dust masks and eye protection.
- Blankets and extra clothing.
- Emergency food and drinking water.
- General emergency supplies: first aid kit, flashlight, fire extinguisher, took lit, flares, matches, survival manual, etc.
- Waterproof tarp, heavy towrope.
- Extra air and oil filters, extra oil, windshield wiper blades and windshield washer fluid.
- Cell phone with extra battery.

WHAT TO DO DURING AND AFTER AN ASH FALL

YOUR HOME

- Close doors, windows and dampers. Place damp towels at door thresholds and other draft sources; tape drafty windows.
- Dampen ash in yard and streets to reduce resuspension.
- Put stoppers in the tops of your drainpipes (at the gutters).
- Protect dust sensitive electronics.
- Since most roofs cannot support more than four inches of wet ash, keep roofs free of thick accumulation. Once ash fall stops, sweep or shovel ash from roofs and gutters. Wear your dust mask and use precaution on ladders and roofs.
- Remove outdoor clothing before entering a building. Brush, shake and pre-soak ashy clothing before washing.
- If there is ash in your water, let it settle and then use the clear water. In rare cases where there is a lot of ash in the water supply, do not use your dishwasher or washing machine.
- You may eat vegetables from the garden, but wash them first.

- Dust often using vacuum attachments rather than dust cloths, which may become abrasive.
- Use battery operated radio to receive information.

YOUR CHILDREN

- Follow school's directions for care of children at school.
- Keep children indoors; discourage active play in dusty settings. Dust masks do not fit well on small children.

YOUR PETS

- Keep pets indoors. If pets go out, brush or vacuum them before letting them indoors.
- Make sure livestock have clean food and water.
- Discourage active play in dusty settings.

YOUR CAR

- If possible, do not drive; ash is harmful to vehicles.
- If you must drive, drive slowly, use headlights, and use ample windshield washer fluid.
- Change oil, oil filters, and air filters frequently (every 50 to 100 miles in heavy dust, i.e., less than 50 feet visibility; every 500 to 1,000 miles in light dust).
- Do not drive without an air filter. If you cannot change the air filter, clean it by blowing air through from the inside out.
- If car stalls or brakes fail, push car to the side of the road to avoid collisions. Stay with your car.

WHAT TO DO DURING THE CLEAN UP PERIOD

- Minimize driving and other activities that resuspend ash.
- Remove as much ash as you can from frequently used areas. Clean from the top down. Wear a dust mask.
- Prior to sweeping, dampen ash to ease removal. Be careful to not wash ash into drainpipes, sewers, storm drains, etc.

- Use water sparingly. Widespread use of water for clean up may deplete public water supply.
- Maintain protection for dust-sensitive items (e.g., computers, machinery) until the environment is really ash-free.
- Seek advice from public officials regarding disposal of volcanic ash in your community.
- Wet ash can be slippery. Use caution when climbing on ladders and roofs.
- Establish childcare to assist parents involved in cleanup.