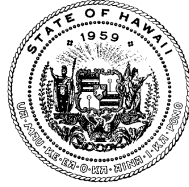


Appendix G: Hawaii's Exceptional Events Mitigation Plan
Hawaii County

DAVID Y. IGE
GOVERNOR OF HAWAII



BRUCE S. ANDERSON, Ph.D.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. Box 3378
HONOLULU, HAWAII 96801-3378

In reply, please refer to:
File:

18-724A CAB

October 31, 2018

Ms. Elizabeth J. Adams
Acting Director
Air Division (Attn: Air-1)
U.S. EPA, Region 9
75 Hawthorne Street
San Francisco, California 94105

Dear Ms. Adams:

Pursuant to 40 Code of Federal Regulations Part 51.930, the Hawaii Department of Health is submitting the Plan for Exceptional Events Mitigation for Hawaii County. The plan is specific to the pollutants sulfur dioxide and particulate matter with an aerodynamic diameter less than or equal to 2.5 microns. The plan was made available for public inspection for thirty (30) days, from September 24, 2018, to October 24, 2018. There were no comments received.

If there are any questions concerning the above reports, please contact Ms. Marianne Rossio, Manager of the Clean Air Branch at (808) 586-4200.

Sincerely,

A handwritten signature in cursive script, appearing to read "Keith E. Kawaoka".

KEITH E. KAWAOKA, D.Env
Deputy Director for Environmental Health

BC:rkb

Enclosures

- c: Gwen Yoshimura, Manager, Air Quality Analysis Office (AIR-7), U.S. EPA, Region 9
Randall Chang, Air Quality Analysis Office (AIR-7), U.S. EPA, Region 9
Michael Flagg, Air Quality Analysis Office (AIR-7), U.S. EPA, Region 9

Plan for Exceptional Events Mitigation for Hawaii County

This plan is prepared by the Clean Air Branch (CAB), Hawaii Department of Health (DOH) to meet the requirements of 40 Code of Federal Regulations (CFR) § 51.930, Mitigation of Exceptional Events. The purpose of this document ("plan") is to set forth the mitigation plan actions to protect public health from exceedances of the national ambient air quality standards (NAAQS) for sulfur dioxide (SO₂) and particulate matter with aerodynamic diameter ≤ 2.5 micrometers (PM_{2.5}) in the county of Hawaii. Hawaii County is composed of the island of Hawaii, which is sometimes referred to as the Big Island, in the state of Hawaii. The Plan comprises the following sections:

- I. Definitions
- II. Background
- III. Federal Requirements
- IV. State Authority
- V. Hawaii Ambient Air Monitoring Network
- VI. Department of Health All-Hazards Emergency Response Plan (AHERP)
- VII. Plan Operation and Implementation
- VIII. Periodic Review and Evaluation of Mitigation Plan Implementation/Effectiveness
- Appendix A 342B-43, Hawaii Revised Statutes - Emergency powers; procedures
- Appendix B 127A-12, Hawaii Revised Statutes - Emergency management powers, in general
- Appendix C Hawaii Volcanoes National Park Air Quality Policy
- Appendix D 11-60.1-17, Hawaii Administrative Rules - Prevention of air pollution emergency episodes

I. Definitions

Air Quality Index (AQI): A color-coded index intended to inform a community about its air quality at a point in time and help individuals determine the degree to which they may want to limit activity or exposure.

AirNow: An online website that provides the daily Air Quality Index for target cities or areas. Six locations in Hawaii County are included in AirNow: Hawaii Volcanoes National Park, Hilo, Kona, Mountain View, Ocean View, and Pahala.

National Ambient Air Quality Standards (NAAQS): Established by the federal Clean Air Act, the NAAQS are a set of numerical air quality standards for several air pollutants which are referred to as the criteria pollutants. For each pollutant, the primary standard represents the highest concentration allowed that ensures the protection of human health. The secondary standard is a level set to protect public welfare.

National Core Monitoring Station (NCORE): A multi-pollutant monitoring station established to support tracking of long-term trends of criteria and non-criteria pollutants, model evaluation, long-term health and ecosystem assessments, and other scientific and technological studies.

Special Purpose Monitoring Stations (SPMS): Ambient air monitoring stations that operate in special areas of interest; they are not subject to the same siting criteria as SLAMS. In Hawaii, the SPMS are established primarily to monitor for emissions from the Kilauea volcano, geothermal energy production, cruise ships, and sugar cane burning.

State and Local Air Monitoring Stations (SLAMS): Ambient air quality monitoring stations that are established primarily to demonstrate compliance with the NAAQS. All SLAMSs must meet siting criteria and be operated under quality-assurance requirements specified by the US Environmental Protection Agency (EPA).

Vog: volcanic haze.

Vog Measurement and Prediction (VMAP): A website of the University of Hawaii School of Ocean and Earth Science and Technology that provides real-time vog forecasts.

II. Background

In September of 2016, the EPA finalized revisions to the 2007 Exceptional Events Rule, which included new requirements to develop MPs in areas with recurring events. The preamble to the final rule indicated that because Hawaii County experiences recurring volcanic eruptions resulting in emissions of both PM_{2.5} and SO₂, they are subject to the requirement to develop a mitigation plan to meet the regulations set forth in 40 CFR §51.930 and to submit this mitigation plan to the EPA Administrator. This Plan is intended to address the PM_{2.5} and SO₂ volcanic eruptions events that have historically occurred in the county of Hawaii.

The Kilauea Volcano on the Island of Hawaii has been erupting almost continuously since 1983 and typically emits thousands of tons of SO₂ per day. SO₂ is an inhalable irritant that can produce respiratory distress, especially at elevated levels and in those with a pre-existing respiratory condition. The SO₂ gas oxidizes in the atmosphere and over time is converted into its particulate form of sulfuric acid mists and sulfate particles. This aerosol made up of liquid and solid particles produce a visible haze which is referred to as "vog."

Where vog affects populated areas depends on the wind direction and speed. During prevailing northeasterly trade winds, SO₂ blows towards the southwest affecting the Kau area and continues moving in the South Kona area having converted to its particulate form. During Kona or southerly wind conditions, SO₂ blows towards the northeast affecting South and North Hilo and if the winds are persistent, the vog may also impact other islands up the chain.

Volcanic emission is recognized as an important public health issue. The DOH has been actively involved in monitoring the level of SO₂ and particulates in the ambient air. The DOH operates five ambient air monitoring stations on the Island of Hawaii located in Kona, Hilo, Mountain View, Ocean View, and Pahala. The main purpose for the stations is to monitor the impact that the volcanic emissions may have in areas where the majority of the populations live and work. After the most recent eruption in May 2018, the DOH made plans to install additional ambient air monitoring stations in communities where no monitoring is currently in place. Moreover, during periods of increased volcanic activity, the DOH and the County of Hawaii may deploy temporary monitors to supplement the ambient air monitors. Air quality information such as notifications, advisories, and air quality forecasts will be provided so that people can plan their day and protect their health.

In July 2014 and February 2016, the EPA concurred with the DOH's demonstrations that exceptional events were the cause of exceedances for PM_{2.5} and SO₂, respectively.

III. Federal Requirements

This Plan is designed to meet the Federal requirements for a mitigation plan as set forth in 40 CFR § 51.930, Mitigation of Exceptional Events. The section requires that the mitigation plan contain provisions for the following:

- Public notification to and education programs for affected or potential affected communities.
- Steps to identify, study and implement mitigation measures, including approaches to address each of the following:
 - Measures to abate or minimize contributing controllable sources of identified pollutants.
 - Methods to minimize public exposure to high concentrations of identified pollutants.
 - Processes to collect and maintain data pertinent to the event.
 - Mechanisms to consult with other air quality managers in the affected area regarding the appropriate responses to abate and minimize impacts.
- Provisions for periodic review and evaluation of the mitigation plan and its implementation and effectiveness by the State and all interested stakeholders.

IV. State Authority

At the state level, Hawaii Revised Statutes (HRS), Chapter 342B, Air Pollution Control grants the DOH the authority to regulate air pollution in the state. Under that authority, the means by which DOH regulates air pollution is set forth in Hawaii Administrative Rules (HAR), Chapters 11-59, Ambient Air Quality Standards, and 11-60.1, Air Pollution Control. Within the HRS, two sections are particularly applicable to this plan:

- Section 342B-43, HRS, attached as Appendix A, allows the Governor or Director of Health to order anyone to reduce or stop the release of air pollutants.
- Section 127A-12, HRS, attached as Appendix B, authorizes the Governor to direct and control the non-compulsory evacuation of the civilian population statewide. It allows the Mayors to do the same for the counties. In an air emergency episode, the Director of Health would be the principal person to contact the Governor or Mayor to initiate evacuation proceedings.

V. Hawaii Ambient Air Monitoring Network

The DOH plans, operates and maintains the statewide ambient air quality monitoring network consisting of SLAMS, SPMS, and NCore stations. Monitoring data is used for a variety of reasons including determining compliance with NAAQS, timely reporting of the EPA AQI, Hawaii Short Term Sulfur Dioxide Advisory website, tracking and characterizing air quality trends, evaluating emission control strategies, and supporting health studies.

The DOH ambient air quality monitoring stations are located on the four major islands. Annual network reviews are conducted to evaluate the network to determine adequacy in meeting monitoring objectives. In Hawaii County, stations monitor for SO₂ and PM_{2.5} at five locations: Hilo, Kona, Mountain View, Ocean View, and Pahala. Additional monitoring stations are being added to the network due to the Kilauea Lower East Rift Zone eruption.

EPA established NAAQS for the following criteria pollutants: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), ozone (O₃), SO₂, particulate matter 10 microns or less in aerodynamic diameter (PM₁₀), and PM_{2.5}. Additionally, there is a state standard for hydrogen sulfide (H₂S).

VI. Plan Operation and Implementation

Pursuant to 40 CFR §51.930, this plan provides for: (1) prompt public notification whenever air quality concentrations exceed the NAAQS for SO₂ and PM_{2.5}; (2) public education on actions individuals may take to reduce exposures during and following an event; and (3) implementation of measures to protect public health from exceedances or violations of the NAAQS for the two subject pollutants caused by exceptional events.

This section sets forth the procedures for the operation and implementation of this plan. The intent is not to formulate precise and rigid procedures but to furnish guidelines for the course of action required to control and conclude an exceedance of the NAAQS due to an exceptional event.

A. Public Notification and Education

Local Notification

The DOH will coordinate with the County of Hawaii officials to provide the most effective communication to the public on air pollution concentrations. For DOH, all formal notifications are issued by its Communications Office. The County of Hawaii, Emergency Operations Plan (EOP) includes guidance for communications and logistics.

The DOH provides data and advisory information on SO₂ and PM_{2.5} to Hawaii County and the general public primarily through three websites:

- The DOH Hawaii Ambient Air Quality Data website displays near real-time air quality data from stationary monitoring stations statewide on a continuous basis.
- The AirNow website provides information and notifications on a number of air pollutants including PM_{2.5}. The website utilizes the AQI to alert users when pollutant concentrations are high. Users may also sign up to receive email alerts via EnviroFlash.
- The Hawaii Short Term SO₂ Advisory website provides data and advisory notifications for sulfur dioxide for the Big Island. The advisory levels were established for 15-minute sampling periods and are intended for short-term early warnings. As such, they differ from the long-term health standards set in the NAAQS.

Health Advisories

Health advisories include appropriate guidance and health risk information. Advisories will be developed by the DOH Hazard Evaluation and Emergency Response Office, reviewed by the CAB, and approved by the DOH Communications Office for release.

Hawaii County Multi-Hazard Mitigation Plan

The plan discusses vog and potential health effects.

Hawaii Volcanoes National Park

Hawaii Volcanoes National Park (HVNP) is located on the southeast side of the Big Island of Hawaii. Its main feature is Kilauea volcano, the source of the naturally occurring exceptional event, which means that park staff can be critical first responders to an event. The HVNP Air Quality Policy, attached as Appendix C, identifies response activities for levels of SO₂ and PM_{2.5} (as well as for H₂S). The action levels are based on the AQI and include guidance for employees to protect themselves and to alert park visitors.

Hawaii Interagency Vog Information Dashboard

The Hawaii Interagency Vog Information Dashboard serves as an online hub for vog-related educational material, forecasts, and alerts and advisories. It provides information and data from a coalition of agencies and organizations, including the Hawaii Department of Health (DOH), US Geological Survey (USGS) Hawaiian Volcano Observatory, US National Park Service (NPS), Hawaii County Civil Defense, Center for the Study of Active Volcanoes - UH Hilo (CSAV), and International Volcanic Health Hazard Network (IVHHN). The dashboard includes a number of documents or links that contribute to public education and notification, including the following:

- Educational materials such as an interagency FAQ booklet on Vog and a USGS fact sheet on volcanic air pollution hazards.
- Vog forecasts including the University of Hawaii's VMAP and the National Weather Services' wind forecast.
- Alerts and advisories on the webpages for the DOH Hawaii Short Term SO₂ advisory, AirNow, DOH ambient air quality data, NPS current SO₂ and PM_{2.5} conditions within HVNP, and the University of Hawaii's website which approximates SO₂ concentrations in Volcano Village.

B. Identify, Study and Implement Mitigating Measures

1. Measures to abate or minimize contributing controllable sources of identified pollutants

Open burning / No-Burn Days

With the one narrow exception for firefighter training, open burning in

Hawaii is only allowed with DOH conditional approval or with a DOH Agricultural Burning Permit (AGP). Both the conditional approvals and AGP include conditions that allow DOH to suspend burning activity by declaring a “no-burn” days in a district. Elevated levels of haze or smoke, including vog, is a primary factor for calling a “no-burn” day.

Permitted Source Activities

Section 11-60.1-17, HAR, attached as Appendix D, gives the Director of Health the authority to curtail activities of operations that hold an air pollution control permit from the Department of Health. The application of restrictions to minimize or stop air pollutant emissions would be done on a case-to-case basis. Determinations should include functional considerations, for example the need to continue to provide electricity for air conditioning and daily or emergency services should be weighed against the benefit of reducing emissions from a power generating station.

2. Methods to minimize public exposure to high concentrations of identified pollutants

Methods to minimize public exposure include the following:

Shelter-in-Place

Shelter-in-Place involves seeking shelter wherever one is located – at home, business or public venue. The County of Hawaii EOP addresses shelter-in-place and other shelter provisions for residents, tourists and pets.

Evacuation

As described in Section IV above, HRS §127A-12 authorizes the Governor to direct and control the non-compulsory evacuation of the civilian population, and the mayors to do the same for a county. Evacuation and provision of shelters for residents, tourists and pets are discussed in the County of Hawaii EOP, primarily in Annex E.

The primary agencies involved in conducting evacuation procedures would be the County of Hawaii Civil Defense Agency and Hawaii Police Department. They may be assisted by a number of government or private organizations including the Hawaii Emergency Management Agency, County of Hawaii Fire Department, American Red Cross, and others.

3. Processes to collect and maintain data pertinent to the event

Air quality data is collected via the Hawaii Ambient Air Monitoring Network (Section V above) and portable stationary monitoring conducted by the NPS inside HVNP. In addition, forecasts of atmospheric stagnation conditions can be acquired from the National Weather Service (NWS).

Forecast information is obtained online from the NWS Forecast Honolulu Office's website or by telephoning the Lead Forecaster.

Additional sources of online air quality data include the following websites:

- DOH HI Short Term SO₂ Advisory
- U.S. EPA AirNow
- DOH Hawaii Ambient Air Quality Data
- NPS – current SO₂ and PM_{2.5} conditions in HVNP
- USGS – recent Kilauea eruption update and summary, information on volcanic hazards
- UH SOEST - Vog Measurement and Prediction Project

4. Mechanisms to consult with other air quality managers in the affected area regarding the appropriate responses to abate and minimize impacts

The Hawaii State Emergency Response Commission (SERC) is organized by the DOH and includes representatives of a number of organizations and individuals who are involved in emergency response and preparedness. Many members come from their Local Emergency Planning Committees (LEPC), which are island- or county-specific subsets of the SERC, and include first responder representatives from county civil defense, police, fire and other agencies. These two bodies hold regularly scheduled meetings and have established formal channels of communication established for emergency response situations.

DOH will communicate directly with managers from other agencies including the NPS, Hawaii Volcanoes National Park; USGS, Hawaiian Volcano Observatory; and others.

C. Provisions for periodic review and evaluation of the mitigation plan

The mitigation plan will be reviewed and at least every five years.

Appendix A

342B-43, Hawaii Revised Statutes Emergency Powers; Procedures

§342B-43 Emergency powers; procedures. (a) Notwithstanding any other law to the contrary, if the governor or the director determines that an imminent peril to the public health and safety is or will be caused by the release of any air pollutant or combination of air pollutants that requires immediate action, the governor or the director, without a public hearing, may order any person causing or contributing to the release of the air pollutant to immediately reduce or stop the release, and may take any and all other actions as may be necessary. The order shall fix a place and time, not later than twenty-four hours thereafter, for a hearing to be held before the director.

(b) Nothing in this section shall be construed to limit any power which the governor or any other officer may have to declare an emergency and act on the basis of such a declaration, if such power is conferred by statute or constitutional provision, or inheres in the office.

Appendix B

127A-12, Hawaii Revised Statutes Emergency Management Powers, In General

§127A-12 Emergency management powers, in general. (a) The governor or mayor, as applicable, may exercise the following powers pertaining to emergency management:

- (1) Prepare comprehensive plans and programs for the protection of the State or county against all hazards, which shall be integrated into and coordinated with the emergency management plans of the State, counties, the federal government, other states, and private-sector and nonprofit organizations;
 - (2) Identify emergency workers required to report for duty as directed by the department head regardless of the availability of any type of leave;
 - (3) Institute training, preparedness, and public-information programs in coordination with the State, counties, the federal government, other states, and private-sector and nonprofit organizations;
 - (4) Provide or authorize suitable insignia of authority for all authorized emergency management personnel; and
 - (5) Direct or control as may be necessary for emergency management:
 - (A) Alerts, warnings, notifications, activations, exercises, drills, and tests;
 - (B) Warnings and signals for alerts or exercises, and any type of warning device, system, or method to be used in connection therewith;
 - (C) Partial or full mobilization of personnel for exercises or training, in advance of, or in response to, an actual emergency or disaster; and
 - (D) The conduct of civilians and the movement and cessation of movement of pedestrians and vehicular traffic during, before, and after alerts, exercises, training, emergencies, or disasters.
- (b) The governor may exercise the following powers pertaining to emergency management:
- (1) Support requests from a mayor for assistance in preparing for, responding to, and recovering from any emergency or disaster or threat thereof;
 - (2) Lease, lend, or otherwise furnish, on such terms and conditions as the governor may consider necessary to promote the public welfare and protect the interest of the State, any real or personal property of the state government, to the President of the United States, the armed forces, or to the emergency management agency of the United States;
 - (3) Enter into, participate in, or carry out mutual aid agreements or compacts for emergency management or emergency management functions with the federal government and with other states;
 - (4) Sponsor and develop mutual aid plans and agreements for emergency management between the State, one or more counties, and other governmental, private-sector, and nonprofit organizations, for the furnishing or exchange of food, clothing, medicine, and other materials; engineering services; emergency housing; police services; health, medical, and related services; firefighting, rescue, transportation, and construction services and facilities; personnel necessary to provide or conduct these services; and such other materials, facilities, personnel, and services as may be needed. The mutual aid plans and agreements may be made with or without provisions for reimbursement of costs and expenses, and on such terms and conditions as are deemed necessary;
 - (5) Take possession of, use, manage, control, and reallocate any public property of the State, real or personal, required by the governor for the purposes of this chapter, including airports, parks, playgrounds, and schools, and other public buildings. Whenever the property is so taken, the governor may make such provision for the temporary accommodation of the government service affected thereby as the governor may deem advisable;

- (6) Utilize all services, materials, and facilities of nongovernmental agencies, relief organizations, community associations, and other private-sector and nonprofit organizations that may be made available;
- (7) Receive, expend, or use contributions or grants, which shall be deemed to be trust funds, in money, property, or services, or loans of property, or special contributions or grants in money, property, or services, or loans of property, for special purposes provided for by this chapter; establish funds in the state treasury for the deposit and expenditure of the moneys; procure federal aid as the same may be available; and apply the provisions of chapter 29 in cases of federal aid, even though not in the form of money. The contributions or grants are appropriated for the purposes of this chapter, or for the special purposes;
- (8) Purchase, make, produce, construct, rent, lease, or procure by condemnation or otherwise, transport, store, install, maintain, and insure, repair, renovate, restore, replace or reconstruct, and distribute, furnish or otherwise dispose of, with or without charges, materials and facilities for emergency management; and to procure federal aid therefor whenever feasible. Chapter 103D and sections 103-50, 103-53, 103-55, 105-1 to 105-10, and 464-4 shall not apply to any emergency management functions of the governor to the extent that the governor finds that the provisions, in whole or in part, impede or tend to impede the expeditious discharge of those functions, or that compliance therewith is impracticable due to existing conditions;
- (9) Provide for the appointment, employment, training, equipping, and maintaining with compensation, or on a volunteer basis without compensation and without regard to chapters 76, 78, and 88, of such agencies, officers, and other persons as the governor deems necessary to carry out the purposes of this chapter; to determine to what extent any law prohibiting the holding of more than one office or employment applies to the agencies, officers, and other persons; and subject to provisions of this chapter, to provide for the interchange of personnel, by detail, transfer, or otherwise, between agencies or departments of the State;
- (10) Make charges in such cases and in such amounts as the governor deems advisable, for any property sold, work performed, services rendered, or accommodations or facilities furnished by the State under this chapter;
- (11) Make or authorize such contracts as may be necessary to carry out this chapter;
- (12) Establish special accounting forms and practices whenever necessary;
- (13) Require each public utility, or any person owning, controlling, or operating a critical infrastructure facility as identified by the governor, to protect and safeguard its or the person's property, or to provide for the protection and safeguarding thereof; and provide for the protection and safeguarding of all critical infrastructure and key resources; provided that without prejudice to the generality of the foregoing two clauses, the protecting and safeguarding may include the regulation or prohibition of public entry thereon, or the permission of the entry upon such terms and conditions as the governor may prescribe;
- (14) Restrict the congregation of the public in stricken or dangerous areas or under dangerous conditions;
- (15) Direct and control the non-compulsory evacuation of the civilian population;
- (16) Order and direct government agencies, officials, officers, and employees of the State, to take such action and employ such measures for law enforcement, medical, health, firefighting, traffic control, warnings and signals, engineering, rescue, construction, emergency housing, other welfare, hospitalization, transportation, water supply, public information, training, and other emergency functions as may be necessary, and utilize the services, materials, and facilities of the agencies

- and officers. All such agencies and officers shall cooperate with and extend their services, materials, and facilities to the governor as the governor may request;
- (17) Provide for the repair and maintenance of public property, whenever adequate provision therefor is not otherwise made; insure the property against any emergency or disaster; provide for the restoration, renovation, replacement, or reconstruction of insured property in the event of damage or loss; and make temporary restoration of public utilities and other critical infrastructure facilities in the event of an emergency or disaster;
 - (18) Fix or revise the hours of government business; and
 - (19) Take any and all steps necessary or appropriate to carry out the purposes of this chapter notwithstanding that those powers in section 127A-13(a) may only be exercised during an emergency period.
- (c) The mayor may exercise the following powers pertaining to emergency management:
- (1) Lease, lend, or otherwise furnish, on such terms and conditions as the mayor may consider necessary to promote the public welfare and protect the interest of the county, any real or personal property of the county government, to the governor of the State, to the mayors of the other counties of the State, or to the agency;
 - (2) Sponsor and develop mutual aid plans and agreements for emergency management between one or more counties, and other governmental, private-sector, or nonprofit organizations, for the furnishing or exchange of food, clothing, medicine, and other materials; engineering services; emergency housing; police services; health, medical, and related services; firefighting, rescue, transportation, and construction services and facilities; personnel necessary to provide or conduct these services; and such other materials, facilities, personnel, and services as may be needed. The mutual aid plans and agreements may be made with or without provisions for reimbursement of costs and expenses, and on such terms and conditions as are deemed necessary;
 - (3) Take possession of, use, manage, control, and reallocate any public property of the county, real or personal, required by the mayor for the purposes of this chapter, including parks, playgrounds, and other public buildings. Whenever the property is so taken, the mayor may make such provision for the temporary accommodation of the government service affected as the mayor may deem advisable;
 - (4) Utilize all services, materials, and facilities of nongovernmental agencies, relief organizations, community associations, and other private-sector and nonprofit organizations that may be made available;
 - (5) Receive, expend, or use contributions or grants, which shall be deemed to be trust funds, in money, property, or services, or loans of property, or special contributions or grants in money, property, or services, or loans of property, for special purposes provided for by this chapter; establish funds in the treasury for the deposit and expenditure of the moneys; and procure federal aid as the same may be available. The contributions or grants are appropriated for the purposes of this chapter, or for the special purposes;
 - (6) Purchase, make, produce, construct, rent, lease, or procure by condemnation or otherwise, transport, store, install, maintain, and insure, repair, renovate, restore, replace or reconstruct, and distribute, furnish or otherwise dispose of, with or without charges, materials and facilities for emergency management; and to procure federal aid therefor whenever feasible. Chapter 103D and sections 103-50, 103-53, 103-55, 105-1 to 105-10, and 464-4 shall not apply to any emergency management functions of and to the extent that the mayor finds that the provisions, in whole or in part, impede or tend to impede the expeditious

discharge of the functions, or that compliance therewith is impracticable due to existing conditions;

- (7) Provide for the appointment, employment, training, equipping, and maintaining, with compensation, or on a volunteer basis without compensation and without regard to chapters 76, 78, and 88, of such agencies, officers, and other persons as the mayor deems necessary to carry out this chapter; to determine to what extent any law prohibiting the holding of more than one office or position of employment applies to the agencies, officers, and other persons; and subject to provisions of this chapter, to provide for the interchange of personnel, by detail, transfer, or otherwise, between agencies or departments of the county;
- (8) Make charges in such cases and in such amounts as the mayor deems advisable, for any property sold, work performed, services rendered, or accommodations or facilities furnished by the county under this chapter;
- (9) Make or authorize such contracts as may be necessary to carry out this chapter;
- (10) Establish special accounting forms and practices whenever necessary;
- (11) Require each public utility, or any person owning, controlling, or operating a critical infrastructure facility as identified by the mayor, to protect and safeguard its or the person's property, or to provide for such protection and safeguarding; and provide for the protection and safeguarding of all critical infrastructure and key resources; provided that without prejudice to the generality of the foregoing two clauses, the protection and safeguarding may include the regulation or prohibition of public entry thereon, or the permission of the entry upon such terms and conditions as the mayor may prescribe;
- (12) Restrict the congregation of the public in stricken or dangerous areas or under dangerous conditions;
- (13) Direct and control the non-compulsory evacuation of the civilian population of the county;
- (14) Order and direct government agencies, officials, officers, and employees of the county, to take such action and employ such measures for law enforcement, medical, health, firefighting, traffic control, warnings and signals, engineering, rescue, construction, emergency housing, and other welfare, hospitalization, transportation, water supply, public information, training, and other emergency functions as may be necessary, and utilize the services, materials, and facilities of the agencies and officers. All such agencies and officers shall cooperate with and extend their services, materials, and facilities to the mayor as the mayor may request;
- (15) Provide for the repair and maintenance of public property, whenever adequate provision therefor is not otherwise made; insure the property against any emergency or disaster; provide for the restoration, renovation, replacement, or reconstruction of insured property in the event of damage or loss; and make temporary restoration of public utilities and other critical infrastructure facilities in the event of an emergency or disaster;
- (16) Fix or revise the hours of county government business; and
- (17) Take any and all steps necessary or appropriate to carry out the purposes of this chapter notwithstanding that those powers in section 127A-13(b) may only be exercised during an emergency period.

Appendix C

Hawaii Volcanoes National Park Air Quality Policy

Hawaii Volcanoes National Park <i>Safety, Health & Environmental Program</i>	Policy Lead Park Safety officer	Date: September 2018
AIR QUALITY POLICY	Revision: 2	Total pages: 8

1.0 PURPOSE

To protect Hawaii Volcanoes National Park (HAVO) employees and volunteers (VIP) from detrimental health effects due to poor air quality from sources such as sulfur dioxide (SO₂), hydrogen sulfide (H₂S), and airborne particulate (PM_{2.5}).

2.0 SCOPE

This policy applies to all HAVO employees, volunteers (VIP), commercial enterprises, governmental agencies working in the Park and visitors to HAVO.

3.0 REFERENCES

- 3.1. HAVO Respiratory Protection Policy January 2018
- 3.2. AIR Now website <http://airnow.gov/index.cfm?action=airnow.fcsummary>
- 3.3. Hawaii Short Term SO₂ index website <http://www.hiso2index.info/>

4.0 PROGRAM ELEMENTS

- 4.1. Fixed station SO₂ monitoring is performed at primary stations using high resolution USEPA certified fixed station monitor, a network of secondary stations using low resolution electrochemical sensors as part of the visitor alert system.
- 4.2. Multigas monitor program to measure H₂S and other gases.
- 4.3. Fixed station PM_{2.5} monitoring. These are co-located with the primary SO₂ station and a subset of the secondary SO₂ station monitors.
- 4.4. SO₂ hand held monitor program

5.0 MONITOR DESCRIPTIONS

- 5.1. A USEPA certified SO₂ fixed monitor (TEI 43C Analyzer, 1 ppb-10 ppm range) is located at the Kilauea Visitor Center (KVC). In July 2018, a similar fixed monitor previously located at Hawaii Volcano Observatory (HVO) was removed due to the ongoing seismic activity in that area and its future location is tbd. A network of low resolution SO₂ electrochemical sensor stations (Ntron MGT4, 0-20 ppm range, with 0.1 ppm resolution)

Air Quality Policy, September, 2018







are located at nine locations: Namakanipaio, Thurston, Steam Vents, Devastation, Kealakomo, end of Chain of Craters Road, Kilauea Visitor Center, Lower and Upper Kahuku.

- 5.1.1. Weekly & monthly maintenance is to be performed on each monitor by HAVO & HVO employees.
- 5.1.2. Semi-annual maintenance of the high resolution monitors are to be funded by the National Park Service (NPS) Air Resource Division (ARD) personnel. Maintenance of the low resolution monitors is funded by the host park. ARD typically contracts out the semi-annual maintenance to Air Resource Specialists (ARS)
52. Two multigas monitors are handheld units by MSA Altair 5X that measure SO₂, H₂S, CO, O₂ and volatile organic compounds (VOC)
53. USEPA certified PM_{2.5} monitoring is accomplished by a Synchronized Hybrid Aerosol Real time Particulate (SHARP) monitor. Originally located at HVO this monitor was relocated to the rainshed (KVC) in July 2018 due to ongoing seismic activity at the HVO site. A TSI DustTrak II DRx, model 8533 PM_{2.5} monitor is located at the actual Kilauea Visitor Center. Purple Air PA II Dual Laser Air sensors are co-located with SO₂ stations at two locations in Kahuku: in the administrative area and along the main administrative road at ~3,400 ft elevation.
54. SO₂ hand held units are Industrial Scientific Tango TX 1 Single Gas Detector (0-150 ppm range, with 0.1 ppm resolution). Maintenance and calibration including bump and span testing is performed by a HAVO employee per manufacturer's specifications and requirements.

6.0 POOR AIR QUALITY OPERATIONAL PLAN

6.1. SO₂

- 6.1.1. SO₂ advisory levels based on State of Hawaii, Department of Health (refer to Appendix A)

SO ₂ Conc (ppm)	ColorCode		Levels of Concern
0-0.1	Green		Good
>0.1-0.2	Yellow		Moderate
>0.2-1	Orange		Unhealthy for Sensitive Groups
>1-3	Red		Unhealthy
>3-5	Purple		Very Unhealthy
>5	Maroon		Hazardous

6.1.2. Actions for sustained levels

- 6.1.2.1. Green: Employees should be aware of action plan and weather forecast, and remain vigilant to changes in air quality.
- 6.1.2.2. Yellow:
 - 6.1.2.2.1. Employees who feel ill from SO₂ shall communicate with their Supervisor and take annual or sick leave if necessary
 - 6.1.2.2.2. Use GAR model for analysis of risk for work areas
 - 6.1.2.2.3. Contingency plans are optionally implemented to provide alternate work

- area
- 6.1.2.2.4. SO2 levels are announced over the HAVO radionetwork
- 6.1.2.2.5. Office employees close windows and doors to minimize entrance of poor outside air
- 6.1.2.2.6. Ensure employees understand NIOSH levels
- 6.1.2.3. Orange:
 - 6.1.2.3.1. All of the above plus:
 - 6.1.2.3.2. Place Changeable Message Sign (CMS) at entrance warning of poor air quality based upon actual measurements or forecasted weather patterns.
 - 6.1.2.3.3. Supervisors to temporarily relocate outdoor workers to inside locations.
 - 6.1.2.3.4. Dispatch to notify Partners at the Park so the Partners can alert their employees and potential sensitive groups.
 - 6.1.2.3.5. Entrance personnel to inform visitors of threat to potentially sensitive groups.
 - 6.1.2.3.6. Park personnel to inform visitors of threat to potentially sensitive groups. as they are noticed.
- 6.1.2.4. Red:
 - 6.1.2.4.1. All of the above plus Dispatch notifies all partners: KMC, Volcano House (VH), Hawaii Pacific Parks Association (HPPA), Civil Defense (CD), USGS Biological Research Division, USDA Quarantine Lab, Three Mountain Alliance, and concessionaire coordinator.
 - 6.1.2.4.2. The Superintendent, Chief Ranger, or designated representative will initiate closure of affected facilities upon **1.5 hours** of continuous level **Red** or a higher level. Affected areas to be closed to limit exposure to visitors, employees and others at the Park.
 - 6.1.2.4.3. Park employees to monitor levels with hand held units to determine the extent of affected areas.
 - 6.1.2.4.4. Closures to remain in effect for 1 hour minimum.**
 - 6.1.2.4.5. Superintendent to determine whether or not to grant administrative leave to certain categories of employees such as those whose work is primarily outdoors.
- 6.1.2.5. Purple
 - 6.1.2.5.1. All of the above plus:
 - 6.1.2.5.2. Based upon Purple zone measurements for **45** minutes or forecasted weather patterns:
- NOTE: the following steps may be enacted at Red level if the Park closes.**
 - 6.1.2.5.2.1. IC to shutdown and evacuate the affected areas; 6.1.2.5.2.1.1. Communication plan enacted
 - 6.1.2.5.2.1.1.1. Phone Tree activated
 - 6.1.2.5.2.1.1.2. Telephone Hotline updated
 - 6.1.2.5.2.1.1.3. Notify partners/concessionaires
- 6.1.2.6. Maroon:
 - 6.1.2.6.1. All of the above plus:
 - 6.1.2.6.2. The Superintendent or Chief Ranger (or designated representative) may close the entire park in the event of Maroon zone measurements for **15 minutes** and forecasted weather patterns indicating a continuation of dangerous SO2 levels.







6.2. H2S and other gases

NOTE: H2S may cause olfactory overload with the initial odor becoming non-detectable at high levels. The use of a portable analyzer and mandatory breathing apparatus is mandatory for working in areas of high H2S concentrations.

- 6.2.1. The Hawaii Department of Health (DOH) 1 hour average for H2S is 0.025ppm (25ppb) and for CO is 9 ppm (refer to Appendix B). The federal primary standard 1 hour average for CO is 35 ppm. There is no Federal standard identified for H2S.
- 6.2.2. HAVO may determine H2S levels in consultation with HVO.
- 6.2.3. Actions:
 - 6.2.3.1. Refer to County rescue operations in the event of extremely high H2S conditions. Currently HAVO does not have self-contained breathing apparatus (SCBA) gear necessary for hazardous H2S operations.
 - 6.2.3.2. Refer to the park's Confined Space Policy for working in areas of potentially high CO concentrations. If the integrity of the atmosphere cannot be guaranteed, a primary breathing air supply is required. An approved breathing apparatus connected to this primary air supply through a manifold can be used. The use of a canister type mask, which operates on the principle of chemical absorption or mechanical filtration, shall not be used.

6.3. Particulate

- 6.3.1. PM2.5 refers to fine particles less than 2.5 micrometers in diameter. These are so small they can only be detected with an electron microscope, and can penetrate deep into lungs, affecting respiratory and cardiovascular systems. Currently there are no 1 hour federal limits or guidelines for PM2. The public health standard is based on both a 24-hour and an annual concentration (refer to Appendix B).
- 6.3.2. The Park's approach will be geared towards existing evidence of volcanic ash in combination with the PM2.5 monitor values (as available) accessed by Volcano Dispatch.
- 6.3.3. In the event that visible ash is noticed the observing party shall report the occurrence to Volcano Dispatch. Dispatch will then alert the incident commander or operations of the time and location of the event. Operations will make the determination of temporary closure or 1 hour closure depending upon further investigation. The person making the observation should remain indoors or inside their car and minimize their exposure. Respiratory protection should be worn to minimize extended exposure to ash fall events.
- 6.3.4. The Air Quality Index (AQI) is an index for reporting various types of air quality including SO₂, Ozone and Particulate. The PM2.5 24-hour standard is used as a basis for health advisories in the parks and is set at 35 micrograms per cubic meter parts (ug/m³). Using the EPA air quality index, the NPS PM2.5 health advisories are based on the levels shown below.
- 6.3.5. PM2.5 health advisory levels:

PM2.5 (ug/m ³)	Color Code		AQI Levels of Health Concern
0-12	Green		Good
12.1-35.4	Yellow		Moderate
35.5-55.4	Orange		Unhealthy for Sensitive Groups
55.5-150.4	Red		Unhealthy
150.5-250.4	Purple		Very Unhealthy
>250.5	Maroon		Hazardous

6.3.6. Actions

Note: these actions are secondary to visible ash fall.

6.3.6.1. Green: No action, employees should be aware of action plan.

6.3.6.2. Yellow:

- 6.3.6.2.1. Use GAR model for analysis of risk for work areas
- 6.3.6.2.2. Contingency plans are optionally implemented to provide alternate work area
- 6.3.6.2.3. PM2.5 levels are announced over the HAVO radio network
- 6.3.6.2.4. Office employees close windows and doors to minimize entrance of poor outside air
- 6.3.6.2.5. Ensure employees understand AQI levels

6.3.6.3. Orange:

- 6.3.6.3.1. All of the above plus:
- 6.3.6.3.2. Place Changeable Message Sign (CMS) at entrance warning of poor air quality based upon actual measurements or forecasted weather patterns.
- 6.3.6.3.3. Supervisors to temporarily relocate outdoor workers to inside locations.
- 6.3.6.3.4. Dispatch to notify Partners at the Park so the Partners can alert their employees and potential sensitive groups.
- 6.3.6.3.5. Entrance personnel to inform visitors of threat to potentially sensitive groups.
- 6.3.6.3.6. Park personnel to inform visitors of threat to potentially sensitive groups as those people are noticed.

6.3.6.4. Red:

- 6.3.6.4.1. All of the above plus
- 6.3.6.4.2. Dispatch notifies all partners: KMC, Volcano House (VH), Hawaii Natural History Association (HNHA), Civil Defense (CD), USGS Biological Research Division and concessionaire coordinator.
- 6.3.6.4.3. Incident Commander to determine closure of affected facilities upon **1 hour** of continuous level red (or above). Affected areas to be closed to limit exposure to visitors, employees and others at the Park.
- 6.3.6.4.4. Park employees to monitor levels with hand held units to determine the extent of affected areas.
- 6.3.6.4.5. Closures to remain in effect for 1 hour minimum.**
- 6.3.6.4.6. Superintendent to determine whether or not to grant administrative leave to certain categories of employees such as those whose work is primarily outdoors.

6.3.6.5. Purple

6.3.6.5.1. All of the above plus:

6.3.6.5.2. Based upon Purple zone measurements for **1 hour** or forecasted weather patterns:

NOTE: the following steps may be enacted at Red level if the Park closes.

6.3.6.5.2.1. IC to shutdown and evacuate the affected areas;

6.3.6.5.2.2. Implement the Continuity of Operation Plan (COP)

6.3.6.5.2.2.1. COP identified employees report to pre identified work areas.

6.3.6.5.2.2.2. COP communication plan enacted

6.3.6.5.2.2.2.1. Phone Tree activated

6.3.6.5.2.2.2.2. Telephone Hotline updated

6.3.6.5.2.2.2.3. Notify partners/concessionaires

6.3.6.6. Maroon:

6.3.6.6.1. All of the above plus:

6.3.6.6.2. Superintendent may close the entire park in the event of Maroon zone measurements for **1 hour** and forecasted weather patterns indicating a continuation of dangerous PM2.5 levels.

7.0 SO2 HAND HELD UNIT

7.1. Unit Description

7.1.1. The hand held units used in HAVO are the Industrial Scientific Gas Badge Pro and Tango Badges.

7.2. The Gas Badge Coordinator shall be the initial point of contact for all maintenance issues with regards to the hand held units.

7.2.1. Gas Badge Coordinator Shall:

7.2.1.1. Coordinate all software updates with the manufacturer

7.2.1.2. Coordinate replacing calibration gas

7.2.1.3. Provide initial training to all users. The Program Lead may delegate this if so desired and the delegated person is sufficiently knowledgeable.

7.2.1.4. Coordinate the replacement and proper disposal of batteries.

7.2.1.5. Review the files on a monthly basis to ensure proper recording

7.3. The Gas Badge Coordinator shall be consulted prior to all purchases of units, gas, docking stations to ensure that compatibility is maintained. This applies to all SO2 item related purchases regardless of the funding source used.

7.4. No programming of gas badges shall occur without the Gas Badge Coordinator's concurrence.

7.5. Each user shall follow the SOP for bump testing and monthly calibration of their Gas Badge unit.

7.6. Divisions are responsible for maintaining their assigned Gas Badges in proper working order and coordinating with the SO2 Gas Badge Coordinator.

7.7. Using Hand Held Units for spot monitoring at a location with no fixed SO2 monitor.

Note: The gas badge operator (operator) shall ensure that their exposure to SO2 is minimized. Depending upon the SO2 levels this can be achieved by moving away from the affected areas, moving indoors or into a vehicle with recirculating air conditioning, and following the Respirator Protection Policy if needing to utilize a gas mask for evacuation only purposes.

7.7.1. The operator shall contact Volcano Dispatch and alert them to the intent to take periodic readings.

7.7.2. The operator shall call Volcano Dispatch and relay the time and gas badge reading.

7.7.3. Exactly 15 minutes later the process will be repeated and this shall repeat for 8 additional readings.

7.7.4. Volcano Dispatch shall add the values together of all nine readings and divide that number by 9. This number is the average of the readings for the past 2 hours.

7.7.5. Volcano Dispatch shall relay that value to the incident commander for consideration under the above listed limits.

8.0 RECORDKEEPING

- 8.1. Air quality records are maintained by the NPS Air Resource Division.
- 8.2. Hand held gas badge training logs shall be maintained in the Safety Office file cabinet.
- 8.3. Gas badge data shall be maintained by the Gas Badge Coordinator.

Appendix A. State of Hawai‘i, Department of Health SO₂ advisory levels

DOH Guidance on Short-term Sulfur Dioxide (SO₂) Advisory Levels

SO ₂ Conc. (ppm) ¹	Color Code & Air Quality Condition	Air Quality Description	Recommended Action/Activity ²		
			Sensitive Groups ³	People Experiencing Health Effects ³	Everyone Else
0 – 0.10	Green (Good)	Considered satisfactory & poses little or no risk	Highly sensitive individuals may be affected at these levels		Potential health effects not expected
0.11-0.20	Yellow (Moderate)	Acceptable, however, may be moderate health concern for small number of people	Be aware that levels are slightly elevated	If you experience breathing difficulties, such as chest tightness or wheezing, stop activities, use a rescue inhaler and find a place to sit down and rest.	Potential health effects not expected, however actions to reduce exposure to vog may be useful
0.21–1.00	Orange (Unhealthy for Sensitive Groups)	Members in sensitive groups, including healthy individuals with mild asthma, may experience health effects. They may be affected at lower levels than general public. Toward the upper end of this range, most asthmatics who are active outdoors are likely to experience some breathing difficulties. General public not expected to be affected in this range.	Avoid outdoor activities that cause heavy breathing or breathing through the mouth ⁴	If you experience breathing difficulties, such as chest tightness or wheezing, stop activities, use a rescue inhaler and find a place to sit down and rest.	Potential health effects not expected, however actions to reduce exposure to vog may be useful
1.01–3.00	Red (Unhealthy)	Everyone may begin to experience health effects. Members of sensitive groups may experience more serious health effects.	Avoid outdoor activities & remain indoors	Consider leaving the area	Avoid outdoor activities that cause heavy breathing or breathing through the mouth ⁴
3.01–5.00	Purple (Very Unhealthy)	Triggers health alert, meaning everyone may experience more serious health effects.	Avoid outdoor activities & remain indoors	Leave the area & seek medical help	Avoid outdoor activities & remain indoors
> 5.01	Maroon (Hazardous)	Triggers health warnings of emergency conditions. Entire population is more likely to be affected.	Avoid outdoor activities & remain indoors. Leave the area if directed by Civil Defense	Leave the area & seek medical help	Avoid outdoor activities & remain indoors. Leave the area if directed by Civil Defense

1/06/11

Air Quality Policy, September, 2018

Appendix B. Federal and State Ambient Air Quality Standards

Federal and State Ambient Air Quality Standards

The U.S. Environmental Protection Agency (EPA) sets *National Ambient Air Quality Standards (NAAQS)* to protect public health and welfare from harmful effects of certain commonly occurring pollutants known as "criteria" pollutants. The EPA requires that states monitor the ambient air to determine attainment of the NAAQS and regulate industries that emit these and other pollutants.

Two types of standards have been established. **Primary standards** set limits to protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly. **Secondary standards** set limits to protect public welfare which includes protection against decreased visibility, and damage to animals, crops, vegetation, and buildings.

Ambient Air Quality Standards

Air Pollutant	Hawaii Standard	Federal Primary Standard	Federal Secondary Standard
Carbon Monoxide 1-hour average 8-hour average	9 ppm 4.4 ppm	35 ppm 9 ppm	None None
Lead 3-month average	1.5 µg/m ³ (calendar quarter)	0.15 µg/m ³ (running 3-month)	Same as primary
Nitrogen Dioxide 1-hour average Annual average	None 0.04 ppm	100 ppb 53 ppb	None Same as primary
Particulate Matter (PM₁₀) 24-hour block average Annual average	150 µg/m ³ 50 µg/m ³	150 µg/m ³ None	Same as primary None
Particulate Matter (PM_{2.5}) 24-hour block average Annual average	None None	35 µg/m ³ 12 µg/m ³	Same as primary 15 µg/m ³
Ozone 8-hour rolling average	0.08 ppm	0.070 ppm	Same as primary
Sulfur Dioxide 1-hour average 3-hour block average 24-hour block average Annual average	None 0.5 ppm 0.14 ppm 0.03 ppm	75 ppb - None None	None 0.5 ppm - -
Hydrogen Sulfide 1-hour average	25 ppb	None	None

ppb = parts per billion by volume

ppm = parts per million by volume

µg/m³ = micrograms per cubic meter of air

Appendix D

Hawaii Administrative Rules §11-60.1-17 Prevention of Air Pollution Emergency Episodes

§11-60.1-17 Prevention of air pollution emergency episodes. (a) This section is designed to prevent the excessive buildup of air contaminants during air pollution episodes, thereby preventing the occurrence of any emergency due to the effects of these contaminants on the public health.

(b) Conditions justifying the proclamation of an air pollution alert, air pollution warning, or air pollution emergency shall be deemed to exist whenever the director determines that the accumulation of air contaminants in any place is attaining or has attained levels which could, if such levels are sustained or exceeded, lead to a threat to the health of the public. In making this determination, the director shall be guided by the criteria set forth in subsections (c) to (g).

(c) If the national weather service issues an atmospheric stagnation advisory or if an equivalent local forecast of stagnant atmospheric conditions is issued, the department shall survey its monitoring stations to determine whether alert, warning, or emergency levels have occurred or are likely to occur.

(d) The alert level is that concentration of pollutants at which first stage control action is to begin. An alert shall be declared, health advisories issued, and source activities curtailed as ordered by the director when any one of the following levels is reached:

- (1) SO₂ - eight hundred µg/m³ (0.3 ppm), twenty-four-hour average;
- (2) PM₁₀ - three hundred fifty µg/m³, twenty-four-hour average;
- (3) SO₂ and particulate matter combined - product of SO₂, µg/m³, twenty-four-hour average and particulate matter, µg/m³, twenty-four-hour average equal to 65 X 10³;
- (4) CO - seventeen mg/m³ (fifteen ppm), eight-hour average;
- (5) Ozone - four hundred µg/m³ (0.2 ppm), one-hour average; or
- (6) NO₂ - one thousand one hundred thirty µg/m³ (0.6 ppm), one-hour average; two hundred eighty-two µg/m³ (0.15 ppm), twenty-four-hour average;

and meteorological conditions are such that this condition can be expected to continue for twelve or more hours.

(e) The warning level indicates that air quality is continuing to degrade and that additional abatement actions are necessary. A warning shall be declared, health advisories issued, and source activities curtailed or terminated as ordered by the director when any one of the following levels is reached:

- (1) SO₂ - one thousand six hundred µg/m³ (0.6 ppm), twenty-four-hour average;
- (2) PM₁₀ - four hundred twenty µg/m³, twenty-four-hour average;
- (3) SO₂ and particulate matter combined - product of SO₂, µg/m³, twenty-four-hour average and particulate matter, µg/m³, twenty-four-hour average equal to 261 X 10³;
- (4) CO - thirty-four mg/m³ (thirty ppm), eight-hour average;
- (5) Ozone - eight hundred µg/m³ (0.4 ppm), one-hour average; or
- (6) NO₂ - two thousand two hundred sixty µg/m³ (1.2 ppm), one-hour average; five hundred sixty-five µg/m³ (0.3 ppm), twenty-four-hour average;

and meteorological conditions are such that this condition can be expected to continue for twelve or more hours.

(f) The emergency level indicates that air quality may have an impact on public health. An emergency shall be declared, health advisories issued, source activities terminated as ordered by the director, and the public evacuated from the affected area if so recommended by the director, civil defense, or the police department when the warning level for a pollutant has been exceeded and:

- (1) The concentrations of the pollutant are continuing to increase;
- (2) The director determines that, because of meteorological or other facts, the concentrations will continue to increase; or

- (3) When one of the following levels is reached:
- (A) SO_2 - two thousand one hundred $\mu\text{g}/\text{m}^3$ (0.8 ppm), twenty-four-hour average;
 - (B) PM_{10} - five hundred $\mu\text{g}/\text{m}^3$, twenty-four-hour average; or
 - (C) SO_2 and particulate matter combined - product of SO_2 , $\mu\text{g}/\text{m}^3$, twenty-four-hour average and particulate matter, $\mu\text{g}/\text{m}^3$, twenty-four-hour average equal to 393×10^3 ;
 - (D) CO - forty-six mg/m^3 (forty ppm), eight-hour average;
 - (E) Ozone - one thousand $\mu\text{g}/\text{m}^3$ (0.5 ppm), one-hour average; or
 - (F) NO_2 - three thousand $\mu\text{g}/\text{m}^3$ (1.6 ppm), one-hour average; seven hundred fifty $\mu\text{g}/\text{m}^3$ (0.4 ppm), twenty-four-hour average.

(g) Once declared, any episode level reached by application of these criteria shall remain in effect until the criteria for that level are no longer met. At that time, the next lower episode level shall be assumed.

**EPA Completeness Determination
Hawaii's Exceptional Events
Mitigation Plan**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street
San Francisco, CA 94105-3901

DEC 04 2018

Mr. Keith Kawaoka
Deputy Director for Environmental Health
Hawaii Department of Health
P.O. Box 3378
Honolulu, Hawaii 96801-3378

Dear Mr. Kawaoka:

Thank you for Hawaii Department of Health's (HDOH's) exceptional events mitigation plan submitted October 31, 2018. EPA reviewed the mitigation plan and determined that it is complete.

Section 319(b) of the Clean Air Act (CAA) authorizes EPA to consider air agency requests to exclude air quality monitoring data that is directly due to exceptional events from use in determinations by the Administrator with respect to exceedances or violations of the NAAQS. All States having areas with historically documented or known seasonal events shall be required to develop an exceptional events mitigation plan with the components identified in paragraph 40 CFR 51.930(b)(2), and to submit the mitigation plan to EPA in accordance with 40 CFR 51.930(b)(3). EPA identified Hawaii County, Hawaii as subject to the mitigation requirements for PM_{2.5} and SO₂ due to volcanic eruptions. *See Treatment of Data Influenced by Exceptional Events*, 81 Fed. Reg. 68216, 68272-73 (Oct. 3, 2016). EPA acknowledges that HDOH submitted this mitigation plan in accordance with 40 CFR 51.930. We determined that the mitigation plan is complete, and are providing HDOH notice pursuant to 40 CFR 51.930(b)(3)(ii). Enclosed is the checklist EPA used to review your plan.

We appreciate HDOH's efforts to develop this mitigation plan, and look forward to continued engagement on exceptional events. If you have any questions regarding this letter or related matters, please feel free to contact Gwen Yoshimura at (415) 947-4134 or Randall Chang at (415) 947-4180 at any time.

Sincerely,

A handwritten signature in black ink, appearing to read "Elizabeth J. Adams", is written over a horizontal line.

for Elizabeth J. Adams
Director, Air Division

Enclosure

cc (via email): Marianne Rossio, HDOH/Clean Air Branch

Exceptional Events Mitigation Plan Checklist

Area Subject to Mitigation Requirements in 40 CFR 51.930: Hawaii County, Hawaii

Applicable Pollutant and Event Type: PM_{2.5} and SO₂ due to Volcanic Eruptions

Date Submitted: October 31, 2018

Data of EPA Review: December 3, 2018

Element Addressed	Plan Page Number	40 CFR 51.930 Mitigation of Exceptional Events Regulatory Citation		User Notes	EPA Review Notes
Yes	See elements below	51.930(a)	A State requesting to exclude air quality data due to exceptional events must take appropriate and reasonable actions to protect public health from exceedances or violations of the NAAQS. At a minimum, the State must:	The air agency responsibilities described in 51.930(a)(1) – (a)(3) are functionally fulfilled by the mitigation plan requirements and components specified under 51.930(b)(2).	
Yes	See elements below	51.930(a)(1)	Provide for prompt public notification whenever air quality concentrations exceed or are expected to exceed an applicable ambient air quality standard;	See above – 51.930(a).	
Yes	See elements below	51.930(a)(2)	Provide for public education concerning actions that individuals may take to reduce exposures to unhealthy levels of air quality during and following an exceptional event; and	See above – 51.930(a).	

Element Addressed	Plan Page Number	40 CFR 51.930 Mitigation of Exceptional Events Regulatory Citation		User Notes	EPA Review Notes
Yes	See elements below	51.930(a)(3)	Provide for the implementation of appropriate measures to protect public health from exceedances or violations of ambient air quality standards caused by exceptional events.	See above – 51.930(a).	
Yes	See elements below	51.930(b)(2)	<i>Plan components.</i> At a minimum, each mitigation plan...shall contain provisions for the following:	State/local/tribal air agency responsibility.	
Yes	P. 4-5	51.930(b)(2)(i)	Public notification to and education programs for affected or potentially affected communities. Such notification and education programs shall apply whenever air quality concentrations exceed or are expected to exceed a NAAQS with an averaging time that is less than or equal to 24-hours.	State/local/tribal air agency responsibility.	
Yes	P. 5-7	51.930(b)(2)(ii)	Steps to identify, study and implement mitigating measures, including approaches to address each of the following:	State/local/tribal air agency responsibility.	
Yes	p. 5-6	51.930(b)(2)(ii)(A)	Measures to abate or minimize contributing controllable sources of identified pollutants.	State/local/tribal air agency responsibility.	
Yes	P. 6	51.930(b)(2)(ii)(B)	Methods to minimize public exposure to high concentrations of identified pollutants.	State/local/tribal air agency responsibility.	
Yes	P. 6-7	51.930(b)(2)(ii)(C)	Processes to collect and maintain data pertinent to the event.	State/local/tribal air agency responsibility.	
Yes	P. 7	51.930(b)(2)(ii)(D)	Mechanisms to consult with other air quality managers in the affected area regarding the appropriate responses to abate and minimize impacts.	State/local/tribal air agency responsibility.	

Element Addressed	Plan Page Number	40 CFR 51.930 Mitigation of Exceptional Events Regulatory Citation		User Notes	EPA Review Notes
Yes	P. 7	51.930(b)(2)(iii)	Provisions for periodic review and evaluation of the mitigation plan and its implementation and effectiveness by the State & interested stakeholders.	State/local/tribal air agency responsibility.	
Yes	See elements below	51.930(b)(2)(iii)(A)	With the submission of the initial mitigation plan according to the requirements in 51.930(b)(3) that contains the elements in 51.930(b)(2), the State must:	State/local/tribal air agency responsibility.	
Yes	Cover Letter	51.930(b)(2)(iii)(A)(1)	Document that a draft version of the mitigation plan was available for public comment for a minimum of 30 days;	State/local/tribal air agency responsibility.	
Yes	Cover Letter	51.930(b)(2)(iii)(A)(2)	Submit the public comments received along with its mitigation plan to the Administrator; and	State/local/tribal air agency responsibility.	
Yes	Cover Letter	51.930(b)(2)(iii)(A)(3)	In its submission to the Administrator, for each public comment received, explain the changes made to the mitigation plan or explain why the State did not make any changes to the mitigation plan.	State/local/tribal air agency responsibility.	
Yes	P. 7	51.930(b)(2)(iii)(B)	The State shall specify in its mitigation plan the periodic review and evaluation process that it intends to follow for reviews following the initial review identified in 51.930(b)(2)(iii)(A).	State/local/tribal air agency responsibility.	

Element Addressed	Plan Page Number	40 CFR 51.930 Mitigation of Exceptional Events Regulatory Citation		User Notes	EPA Review Notes
Yes	Cover Letter	51.930(b)(3)	<i>Submission of mitigation plans.</i> All States subject to the provisions of 51.930(b) shall, after notice and opportunity for public comment identified in 51.930(b)(2)(iii)(A), submit a mitigation plan to the Administrator for review and verification of the plan components identified in 51.930(b)(2).	This provision is also described in section 51.930(b)(2)(iii)(A)(1).	
Yes	Cover Letter	51.930(b)(3)(i)	States shall submit their mitigation plans within 2 years of being notified they are subject to 51.930(b).	State/local/tribal air agency responsibility.	