Draft Climate Change Adaptation Implementation Plan
The Office of Chemical Safety and Pollution Prevention (OCSPP)

June 2014

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Preface

The U.S. Environmental Protection Agency (EPA) is committed to identifying and responding to the challenges that a changing climate poses to human health and the environment.

Scientific evidence demonstrates that the climate is changing at an increasingly rapid rate, outside the range to which society has adapted in the past. These changes can pose significant challenges to the EPA's ability to fulfill its mission. The EPA must adapt to climate change if it is to continue fulfilling its statutory, regulatory and programmatic requirements. The Agency is therefore anticipating and planning for future changes in climate to ensure it continues to fulfill its mission of protecting human health and the environment even as the climate changes.

In February 2013, the EPA released its draft *Climate Change Adaptation Plan* to the public for review and comment. The plan relies on peer-reviewed scientific information and expert judgment to identify vulnerabilities to EPA's mission and goals from climate change. The plan also presents 10 priority actions that EPA will take to ensure that its programs, policies, rules, and operations will remain effective under future climatic conditions. The priority placed on mainstreaming climate adaptation within EPA complements efforts to encourage and mainstream adaptation planning across the entire federal government.

Following completion of the draft *Climate Change Adaptation Plan*, each EPA National Environmental Program Office, all 10 Regional Offices, and several National Support Offices developed a *Climate Adaptation Implementation Plan* to provide more detail on how it will carry out the work called for in the agency-wide plan. Each *Implementation Plan* articulates how the office will integrate climate adaptation into its planning and work in a manner consistent and compatible with its goals and objectives.

Taken together, the *Implementation Plans* demonstrate how the EPA will attain the 10 agency-wide priorities presented in the *Climate Change Adaptation Plan*. A central element of all of EPA's plans is to build and strengthen its adaptive capacity and work with its partners to build capacity in states, tribes, and local communities. EPA will empower its staff and partners by increasing their awareness of ways that climate change may affect their ability to implement effective programs, and by providing them with the necessary data, information, and tools to integrate climate adaptation into their work.

Each Program and Regional Office's *Implementation Plan* contains an initial assessment of the implications of climate change for the organization's goals and objectives. These "program vulnerability assessments" are living documents that will be updated as needed to account for new knowledge, data, and scientific evidence about the impacts of climate change on EPA's mission. The plan then identifies specific priority actions that the office will take to begin addressing its vulnerabilities and mainstreaming climate change adaptation into its activities. Criteria for the selection of priorities are discussed. An emphasis is placed on protecting the most vulnerable people and places, on supporting the development of adaptive capacity in the tribes, and on identifying clear steps for ongoing collaboration with tribal governments.

Because EPA's Programs and Regions and partners will be learning by experience as they mainstream climate adaptation planning into their activities, it will be essential to evaluate their efforts in order to understand how well different approaches work and how they can be improved. Each *Implementation Plan* therefore includes a discussion of how the organization will regularly evaluate the effectiveness of its adaptation efforts and make adjustments where necessary.

The set of *Implementation Plans* are a sign of EPA's leadership and commitment to help build the nation's adaptive capacity that is so vital to the goal of protecting human health and the environment. Working with its partners, the Agency will help promote a healthy and prosperous nation that is resilient to a changing climate.

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Draft: Climate Change Adaptation Implementation Plan

The Office of Chemical Safety and Pollution Prevention (OCSPP)

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Background

On October 5, 2009, the President signed Executive Order (EO) 13514 on Federal Leadership in Environmental, Energy and Economic Performance[1]. The EO established the Interagency Climate Change Adaptation Task Force and tasked it with delivering a report within a year with recommendations on policies and practices that Federal agencies can adopt that are compatible with and reinforce a national climate change adaptation strategy. The Task Force, co-chaired by the Council on Environmental Quality (CEQ), the National Oceanic and Atmospheric Administration (NOAA), and the Office of Science and Technology Policy (OSTP) delivered the report to the President on October 5, 2010[2]. One of its recommendations calls for all Agencies to develop a climate change adaptation plan. On March 4, 2011, the CEQ issued guidance for Federal agencies to implement climate change adaptation planning in accordance with EO 13514. That guidance sets a target for each agency to develop a policy statement and an adaptation plan.

On June 2, 2011, the EPA Administrator issued a policy statement on climate change adaptation[3]. The statement commits the Agency to develop an EPA Climate Change Adaptation Plan to integrate climate adaptation into the Agency's programs, policies, rules, and operations. The statement also directs all EPA program and regional offices to develop plans for implementing the Agency-wide Climate Change Adaptation Plan. The Agency

[1] EO 13514, October 5, 2009. http://www.whitehouse.gov/administration/eop/ceq/sustainability

[2] White House Council on Environmental Quality, *Progress Report on the Interagency Climate Change Adaptation Task Force: Recommended Actions in Support of a National Climate Change Adaptation Strategy* (Washington, DC, October 5, 2010). http://www.whitehouse.gov/sites/default/files/microsites/ceq/Interagency-Climate-Change-Adaptation-Progress-Report.pdf

[3] U.S. Environmental Protection Agency, *Policy Statement on Climate-Change Adaptation*, June 2, 2011. http://epa.gov/climatechange/Downloads/impacts-adaptation/adaptation-statement.pdf.

provided its draft plan it to OMB and CEQ during the summer of 2012. The draft plan was publicly released on February 7, 2013[4].

Each program and regional office was asked to develop an implementation plan, contributing to the Agency's adaptation plan that addresses certain key elements in its implementation plans. The elements considered include: programmatic vulnerabilities, priority actions, role in the Agency's strategic measures, legal/enforcement, training/outreach, partnerships with tribes, impacts on vulnerable populations/locations, and evaluation to inform the organization's efforts to integrate climate adaptation into its activities.

Overview of OCSPP's Role in Implementing Agency Strategic Goals

Goal 4 of EPA's Strategic Plan is "Ensuring the Safety of Chemicals and Preventing Pollution". OCSPP has the primary responsibility in its day-to-day decisions to ensure the safety of chemicals. OCSPP also is responsible for managing the Agency's pollution prevention programs that are designed to prevent pollution at the source, promote the use of greener substances, and conserve natural resources.

Chemicals used to make our products, build our homes, protect property and crops, and support our way of life can end up in the environment and some may accumulate in our bodies. A changing climate can affect exposures to a wide range of chemicals. EPA's efforts to assess chemical safety, and to implement chemical management decisions and pollution prevention programs to minimize exposures could be impacted by changing environmental conditions related to extreme weather events (e.g., increasing run off can increase pollution in nearby streams) or changing chemical use patterns (e.g., changing pest pressure can affect the use of agricultural chemicals).

The regulatory framework that OCSPP uses to ensure chemical safety differs for pesticides and other industrial chemicals in commerce. Pesticides are regulated under the Federal Fungicide, Insecticide and Rodenticide Act (FIFRA) and under the Federal Food, Drug, and Cosmetic Act (FFDCA), which

[4] EPA's Draft Climate Change Adaptation Plan, February 7, 2013. http://www.epa.gov/climatechange/pdfs/EPA-climate-change-adaptation-plan-final-for-public-comment-2-7-13.pdfhttp://epa.gov

are managed by the Office of Pesticide Programs (OPP) within OCSPP. Other industrial chemicals in commerce are regulated under the Toxic Substances Control Act (TSCA), which is managed by the Office of Pollution Prevention and Toxics (OPPT) within OCSPP. OPPT also administers the Pollution Prevention Act through a series of programs that identify and leverage opportunities to prevent pollution.

Vulnerability Assessment

The effects on the environment resulting from climate change pose new challenges to EPA as it strives to fulfill its mission of protecting human health and the environment. Challenges resulting from a changing environment due to climate change that may inhibit the Agency's ability to fulfill its mission are referred to as vulnerabilities. Vulnerabilities can be a physical change in the environment causing increased exposure to chemicals or that may relate to programmatic processes or tools that may need to be adapted as a result of a changing environment. This section discusses potential vulnerabilities to the Agency's mission of ensuring chemical safety and preventing pollution. Overall, it is not likely the vulnerabilities discussed below will impede OCSPP's ability to carry out its core mission of ensuring chemical safety and preventing pollution because many of its programmatic processes can be readily adapted to address changing environmental conditions, including those resulting from climate change.

Changes in chemical exposure can result from the effects on the environment caused by a changing climate. For example, a changing climate can alter pest pressure or the location where crops are grown, which in turn may affect the rate, timing and/or frequency of chemical use. Changing environmental conditions may result in the introduction of new disease vectors or invasive species that could increase the demand for evaluating and making decisions regarding the safety of new chemicals or new uses of existing products to address public health threats.

To make decisions on the safety of chemicals, EPA relies on the best available science and assessment tools and when quality monitoring data are unavailable, it relies on models to estimate exposures to chemicals. The primary vulnerability OCSPP identified for its chemicals management programs is to ensure that the tools and methodologies it uses remain robust so that they reasonably reflect environmental changes, including those influenced by climate change.

OCSPP is examining the ways in which its models and tools may need updating to account for changing environmental conditions and the potential effects of climate change. OCSPP has begun to review the potential implications of climate change for its current approaches to evaluating pesticide/industrial chemicals exposures to the environment and people including children, agricultural workers, and other groups who may be disproportionally exposed or affected.

The role of OPP is to make pesticide licensing and re-licensing decisions and conduct additional program activities to ensure that pesticides are used in a manner that is protective of human health and the environment. OPPT assesses the potential safety of new and existing industrial chemicals in commerce on human health and the environment using the same or similar models and tools as used to evaluate pesticide exposures. The methodologies and tools used to assess pesticide risks have been peer reviewed and are the state of the art used throughout the world. To ensure that the underlying science is sound in light of climate change, OCSPP is evaluating its assessment tools to ensure that they address changes in important environmental factors resulting from climate change.

To assist with the evaluation of potential programmatic vulnerabilities, OPP consulted with the FIFRA Scientific Advisory Panel (SAP)[5] to seek advice on areas within pesticide assessment processes that may be vulnerable to changing climatic conditions. OPP asked the SAP to provide guidance on its model review and preliminary conclusions, and on sources of information that may help fill knowledge gaps. The SAP concluded that climate change would likely impact pest pressure, how and where pesticides are used, and the quantity of pesticides used. The SAP agreed with OPP's preliminary conclusion that since EPA reviews pesticide registrations at least every 15 years using assessment methodologies that are conservative and protective of human health and the environment, it is expected that the assessments, and decisions based on them, will remain protective.

One area of vulnerability identified by the SAP was the use of increasingly dated weather datasets in some models that estimate pesticide exposure. The SAP noted that the historical weather datasets might not fully reflect

[5] The SAP is a Federal Advisory Committee established under the law to provide advice on pesticide-related science issues.

recent changes in climate and current weather trends. OPPT has similar concerns, especially in the assessment of chemicals that have the potential for large releases to air and resulting exposures to the environment and people, including children. Some of EPA's exposure models that contain climate-related variables may need updating as weather patterns, temperatures, stream flow rates, air currents, precipitation rates, and other climate variables continue to change. With input from the SAP, OCSPP has begun to update its assessment approaches with the inclusion of current weather data to ensure that its assessments reflect current environmental conditions that could include factors affected by climate change. In the course of keeping its modeling capabilities current, as other information and resources become available, OCSPP may need to consider incorporating different assumptions or default environmental variables for physical-chemical properties that may vary with a changing climate and environmental conditions (pH, temperature, or flow rates).

Extreme weather events and impacts to energy production and use are important considerations in OCSPP's Pollution Prevention Program. Limited availability of water and other natural resources are changing the way manufacturers produce products, driving them to look for new ways to reduce and reuse water and materials. Increased demands on energy are pushing businesses to streamline production processes and minimize waste. The Pollution Prevention program did not identify additional vulnerabilities to its programmatic capabilities that could result from changing climatic conditions. The program's focus on water and energy conservation supports approaches and practices that businesses, communities, and state and local governments will need to employ in order to respond to climate change. Recognizing the critical role pollution prevention can play is an important environmental consideration within the context of climate change adaptation. The Pollution Prevention program did not identify specific vulnerabilities to its programmatic capabilities that could result from changing climatic conditions although they may present new challenges.

There may be other changes in environmental conditions that could impact chemical safety for which the Agency may need to consider. Rising sea levels and more frequent extreme weather events increase the vulnerability to flooding and destruction of structures in low lying areas. Chemical storage facilities may be located in low lying areas and could be at risk of increasing potential for chemical releases into the environment as a result of major weather events. Many farms are along major rivers, and storage facilities and businesses supplying pesticides can be in close proximity to the field

where pesticides are used. Similarly, industrial chemicals could be stored in low lying areas near ports along the seaboard, rivers, and other waterways. The Agency is not certain of the significance of this vulnerability; however, further study to determine the location of chemical facilities that may be at risk may be warranted.

Summary of Program Vulnerabilities to Climate Change Impacts on Chemical Safety

	Climate Change Impact	Likelihood of Impact	Focus of Associated EPA Program	Likelihood EPA Program will be Affected by Impact	Example of Risks if Program were Impacted
Goal 4: Ensuring Safety of Chemicals & Preventing Pollution	• Increasing extreme temperatures • Increasing heavy precipitation events	• Very likely • Likely	• Protecting human health and ecosystems from chemical risks.	• Low	• Assure that chemical exposure models continue to be protective in light of changes in the environment • Changing in planting timing or location may affect the volume and timing of agricultural chemical use which could impact the appropriate risk management decisions. • Changing pest pressure in agriculture and public health may place additional demands on the new registration, special local need and emergency exemption processes. • Chemical storage facilities may be located in low lying areas that may be increasing at risk due to sea level increases or an increase in severe weather events.
			• Reduces pollution at sources	• Low	• Disruptions in energy or water supplies may increase demand for pollution prevention resources.

Priority Actions on Climate Change Adaptation

To determine which potential programmatic vulnerabilities may warrant closer attention, OCSPP considered a number of criteria. Factors considered included the ability to quickly mainstream climate change adaptation into core processes, the likelihood for affecting core program goals, the scale of the potential impact, the timing of the impact, and the severity of the impact. Vulnerabilities that can readily be incorporated into core processes generally are addressed in OCSPP current approaches. These actions involve little additional cost to the program. Some actions are currently underway, while others may be addressed without additional resources.

OCSPP is positioned to address the effects of climate change and changing environmental conditions on chemical safety and pollution prevention. The principal challenge to the program is to ensure that the tools and models it uses adequately reflect the changes in the environment that may affect human health and the environment.

This section discusses climate change adaptation-related activities and processes that OCSPP can readily mainstream into its programs so that it continues to meet its protection goals.

Public Health Pesticide Registration

- The spread or introduction of certain public health pests can be attributed, in part, to climate change. OPP has and will continue to work aggressively with companies and researchers to identify safe pest control products and strategies to minimize adverse effects on public health.

Tools and Models

- Volatilization – In the past, the FIFRA SAP raised concerns that OPP's current risk assessment approach does not consider off-site movement due to volatilization of pesticides. OPP now includes the potential for volatilization in its screening level assessments and will keep climate change in mind as it considers how to incorporate volatilization into its more refined assessments.

- Developing a spatial component to PRZM/EXAMS – The Pesticide Root Zone Model (PRZM) simulates chemical movement in unsaturated soil systems within and immediately below the plant root zone. PRZM is

often linked with the Exposure Analysis Modeling System (EXAMS), which simulates the processes that occur in a water body situated next to an agricultural field. The FIFRA SAP suggested that OPP consider the geographic changes in pesticide use that will likely occur as a result of climate change. OPP is currently developing a spatial component to PRZM/EXAMS that it expects to complete by 2014. This model development effort is expected to more fully account for regional differences in cropping, pesticide use, and environmental conditions. These changes will help ensure that pesticide environmental assessment methodology is resilient to changes in real-world conditions, including those caused by climate change.

- In the normal course of updating models and tools, OCSPP will consider new pathways and changes in chemical behavior resulting from a changing climate.

- OPPT also has developed a geospatial component for its web-based IGEMS (Internet Geographical Exposure Modeling System) model to advance its higher tier exposure modeling capability to assess exposure to chemicals, calculating environmental concentrations in air, soil, water, and ground water. As resources are available, OCSPP could consider updating modeling capabilities to address changing assumptions or default variables for other physical-chemical properties that may vary with changing environmental conditions (pH, temperature, or flow rates).

Pollution Prevention

- OPPT's Economy, Energy, Environment (E3) framework helps manufacturers reduce energy usage and conserve natural resources. Helping businesses to employ energy conservation techniques and discover new ways to reduce and reuse water and materials better positions them to respond to resource challenges that may result from climate change.

Specific information and data that would support OCSPP's mainstreaming efforts include:

- Acquiring current weather data to incorporate into risk assessment tools. This effort is underway.

- Acquiring, as the budget allows, up-to-date chemical use information.
- Acquiring information to improve our understanding of the location of existing facilities and the effect extreme weather events might have on facilities in low lying areas. Acquiring such information would be a part of an Agency-wide mapping effort lead by the Office of Research and Development.

Agency-wide Strategic Measures on Climate Change Adaptation

The Agency's Strategic Plan 2011-2015 includes a strategic goal to mainstream climate change adaptation into its programs. One specific mechanism for achieving the mainstreaming goal is through the development of scientifically sound decision tools. The primary mechanism by which the OCSPP will contribute to this goal is by ensuring that the tools used to assess chemical risks continue to provide robust estimates of potential risks in light of changing environmental conditions that may result from climate change.

Legal and Enforcement Issues

OCSPP believes that any changes in the conditions for regulating, approving, licensing or regulating chemicals can be accomplished in the current regulatory or enforcement structure.

Training and Outreach

Existing training and outreach programs within OCSPP can be used to communicate with, and educate the public about, any changes in the permitted use of chemicals that may result from changing environmental conditions. Internally, OCSPP will, as appropriate, encourage staff to participate in training developed across the Agency regarding mainstreaming of climate change adaptation into its programmatic work.

Partnerships with States and Tribes

OCSPP currently has existing mechanisms and strong partnerships with states and tribes which can be utilized to seek input and communicate programmatic activities related to climate change adaptation.

Vulnerable Populations and Places

Currently, OCSPP's assessment and decision making approaches take into consideration the identification of populations that may be disproportionately affected by chemical exposures. One area that may warrant further cross-agency discussion and investigation is the impact of the potential exposures to communities near chemical storage facilities in the event of a significant weather event.

Evaluation and Cross-Office Pilot Projects

Currently, OCSPP's key chemical assessment tools and science policies are peer reviewed by the FIFRA SAP for pesticides and by the Agency's Science Advisory Board (SAB) for other industrial chemicals. OCSPP would use independent peer review of any significant changes to assessment tools or models.