U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF INSPECTOR GENERAL

Catalyst for Improving the Environment

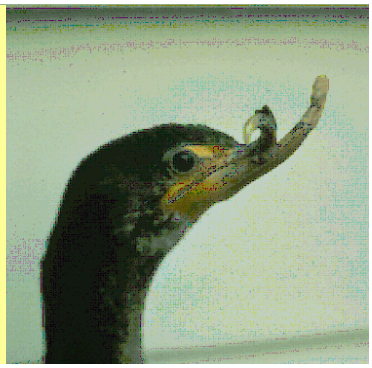
Evaluation Report

EPA's Endocrine Disruptor Screening Program Should Establish Management Controls to Ensure More Timely Results

Report No. 11-P-0215

May 3, 2011





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Abbreviations

APR	Annual Performance Review
EDSP	Endocrine Disruptor Screening Program
EDSTAC	Endocrine Disruptor Screening and Testing Advisory Committee
EPA	U.S. Environmental Protection Agency
FQPA	Food Quality Protection Act of 1996
FY	Fiscal year
ICCVAM	U.S. Interagency Coordinating Committee on the Validation of Alternative Methods
NIEHS	National Institute of Environmental Health Sciences
NRDC	Natural Resources Defense Council
OCSPP	Office of Chemical Safety and Pollution Prevention
OECD	Organization for Economic Cooperation and Development
OIG	Office of Inspector General
ORD	Office of Research and Development
SAB	Science Advisory Board (EPA)
SAP	Scientific Advisory Panel (Federal Insecticide Fungicide and Rodenticide Act)
SDWA	Safe Drinking Water Act
SEP	Standard Evaluation Procedure

Cover photos: *left:* farmer spraying pesticides (photo courtesy National Institute of Environmental Health Sciences); *center:* mink frog with extra limb (photo courtesy U.S. Geologic Survey); *right:* cross-billed cormorant with deformed beak (EPA photo from Office of Research and Development presentation titled: Overview of EPA's Endocrine Disruptors Research, March 14, 2004)

U.S. Environmental Protection Agency
Office of Inspector General

11-P-0215
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At a Glance

Catalyst for Improving the Environment

Why We Did This Review

We sought to determine whether the U.S. Environmental Protection Agency (EPA) has planned and conducted the requisite research and testing to evaluate and regulate endocrine-disrupting chemicals. We focused on EPA's Endocrine Disruptor Screening Program (EDSP) because it is the program that focuses on screening and testing chemicals with endocrine-disrupting effects.

Background

In 1996, Congress passed the Food Quality Protection Act (FQPA), which gave EPA the authority to screen and test substances that may have an effect in humans that is similar to that of a naturally occurring estrogen, or such other endocrine effects as the EPA Administrator may designate. In 1998, EPA established the EDSP, which uses a two-tiered screening and testing approach to assess endocrine effects. EDSP was expanded to include androgenic and thyroid effects.

For further information, contact our Office of Congressional, Public Affairs and Management at (202) 566-2391.

The full report is at:
www.epa.gov/oig/reports/2011/20110503-11-P-0215.pdf

EPA's Endocrine Disruptor Screening Program Should Establish Management Controls to Ensure More Timely Results

What We Found

Fourteen years after passage of the FQPA and Safe Drinking Water Act amendments, EPA's EDSP has not determined whether any chemical is a potential endocrine disruptor. EDSP has not developed a management plan laying out the program's goals and priorities, or established outcome performance measures to track program results. EDSP missed milestones for assay validation and chemical selection established by the 2001 Natural Resources Defense Council (NRDC) settlement agreement. Completed activities exceeded their targets by about 4½ to 6 years. An EDSP manager told us that EDSP was unaware of the complexities, resources, and time needed to validate assays until years after the 2001 settlement agreement was signed. However, EDSP did not substantially revise its milestones for completing assay validation in its status reports to NRDC. For example, 9 of 11 updates that EPA provided to NRDC for the estrogen receptor binding assay incrementally adjusted the milestones, collectively, by a total of 4½ years. Concerned about program progress, in 2007, Congress instituted reporting requirements, and in 2009, specified deadlines for certain EDSP activities. As a result, EPA recently published two EDSP documents for public comment.

We acknowledge the difficulties involved in establishing an effective endocrine disruptor screening and testing program. However, in addition to lacking a management plan and outcome measures, EDSP has not created a final statement of policy, finalized specific procedures to evaluate Tier 1 screening results, or established specific procedures to evaluate Tier 2 testing results. EDSP needs to develop and implement plans and performance measures to establish management control and accountability. EDSP plans to develop a management plan for the program but had not done so at the time of our review.

What We Recommend

We recommend that EPA (1) define and identify the universe of chemicals for screening and testing, (2) develop and publish a standardized methodology for prioritizing the universe of chemicals for screening and testing, (3) finalize specific Tier 1 and Tier 2 criteria to evaluate testing data, (4) develop performance measures, (5) develop a comprehensive management plan, and (6) hold annual program reviews. EPA agreed to develop a comprehensive management plan and performance measures. However, EPA's response did not provide sufficient information for us to determine whether its plans to develop a standardized methodology for chemical prioritization and to finalize Tier 2 criteria would meet the intent of the two recommendations. The Agency did not agree to define and identify the universe of chemicals, and only agreed to continue its existing annual program reviews. We consider recommendations 1, 2, 3, and 6 unresolved.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

THE INSPECTOR GENERAL

May 3, 2011

MEMORANDUM

SUBJECT: EPA's Endocrine Disruptor Screening Program Should Establish Management Controls to Ensure More Timely Results
Report No. 11-P-0215

FROM: Arthur A. Elkins, Jr.
Inspector General

TO: Stephen A. Owens
Assistant Administrator for Chemical Safety and Pollution Prevention

This is our report on the Endocrine Disruptor Screening Program based on a review conducted by the Office of Inspector General (OIG) of the U.S. Environmental Protection Agency (EPA). This report contains findings that describe the problems the OIG has identified and corrective actions the OIG recommends. This report represents the opinion of OIG and does not necessarily represent the final EPA position. Final determinations on matters in this report will be made by EPA managers in accordance with established audit resolution procedures.

The estimated direct labor and travel costs for this report are $414,775.

Action Required

In accordance with EPA Manual 2750, you are required to provide a written response to this report within 90 calendar days. You should include a corrective actions plan for agreed-upon actions, including milestone dates. Your response will be posted on the OIG's public website, along with our memorandum commenting on your response. Your response should be provided as an Adobe PDF file that complies with the accessibility requirements of Section 508 of the Rehabilitation Act of 1973, as amended. The final response should not contain data that you do not want released to the public; if your response contains such data, you should identify the data for redaction or removal. We have no objections to the further release of this report to the public. We will post this report to our website at http://www.epa.gov/oig.

If you or your staff have any questions regarding this report, please contact Wade Najjum, Assistant Inspector General for Program Evaluation, at (202) 566-0832 or najjum.wade@epa.gov; or Rick Beusse at (919) 541-5747 or beusse.rick@epa.gov.

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Chapter 1
Introduction

Purpose

The purpose of our review was to determine whether the U.S. Environmental Protection Agency (EPA) has planned and conducted the requisite research and testing to evaluate and regulate endocrine-disrupting chemicals. We focused on EPA's Endocrine Disruptor Screening Program (EDSP) because it is the program that focuses on screening and testing chemicals with endocrine-disrupting effects.

Background

Endocrine Systems

Endocrine systems, also referred to as hormone systems, are found in all mammals, birds, fish, and many other organisms. The endocrine system regulates biological processes in the body from conception through adulthood, including the development of the brain and nervous system, the growth and function of the reproductive system, and metabolism and blood-sugar levels. The female ovaries, male testes, hypothalamus, pituitary, and thyroid glands are major constituents of the endocrine system.

Endocrine Disruptors

Endocrine disruptors are chemicals that mimic, block, or otherwise disrupt the normal function of hormones. Adverse effects in humans that may be endocrine related include breast cancer, diabetes, obesity, infertility, and learning disabilities. According to the National Institute of Environmental Health Sciences (NIEHS), researchers have observed increases in endocrine-sensitive health outcomes over the past 50 years. For example, breast and prostate cancer incidence in 15 industrialized countries increased from 1969 to 1986, and ectopic pregnancies[1] increased fourfold in the United States from 1970 to 1987. Various types of chemicals have been found to disrupt the endocrine systems of animals, resulting in developmental and reproductive effects in fish and wildlife.

Key Legislation

In the 1990s, concerns grew about the presence of endocrine disruptors in food and water and the potential risk they posed to humans and wildlife. Reflecting

[1] In an ectopic pregnancy, the fertilized egg develops outside of the uterus.

these concerns, Congress passed both the Food Quality Protection Act (FQPA) and amendments to the Safe Drinking Water Act (SDWA) in August 1996.

The FQPA required EPA to develop and implement a screening program using validated test systems and other scientifically relevant information to determine whether certain substances may have an effect in humans that is similar to that of a naturally occurring estrogen, or such other endocrine effects as the EPA Administrator may designate. The FQPA required that EPA test all pesticide chemicals. It also gave the Agency discretionary authority to test any other substance that may have an effect that is cumulative to an effect of a pesticide chemical if the EPA Administrator determined that a substantial population may be exposed to it. It required EPA to implement the program by August 1999.

The SDWA amendments provided EPA additional discretionary authority to use the screening program created by FQPA to test substances, in addition to pesticides, that may be found in sources of drinking water, if the EPA Administrator determined that a substantial population may be exposed to them. Additionally, the Toxic Substances Control Act provided EPA with authority to require testing for and information about new and existing chemical substances.

Endocrine Disruptor Screening and Testing Advisory Committee

In 1996, EPA formed the Endocrine Disruptor Screening and Testing Advisory Committee (EDSTAC), a federal advisory committee composed of multiple stakeholders, to advise EPA on how to develop the screening and testing program. In its 1998 report, EDSTAC recommended that EPA expand the scope of the program to include androgenic and thyroid hormone effects. In addition, EDSTAC also recommended that EPA incorporate additional hormone systems as more data became available.

In 1998, EDSTAC estimated that an initial universe of 87,000 chemicals would need to be screened. EDSTAC narrowed this estimate to 62,000 after eliminating polymers deemed too large to cause endocrine-mediated effects. EDSTAC recommended that EPA evaluate chemicals using validated assays arranged in two tiers:

Tier 1—a screening battery to identify substances that may interact with the estrogen, androgen, and/or thyroid hormone systems.

Tier 2—a testing battery to determine, if warranted by the Tier 1 screening results, whether a substance exhibits endocrine-mediated adverse effects. Tier 2 testing would identify, characterize, and quantify those effects.

Any chemical identified as an endocrine disruptor by Tier 2 testing would proceed to hazard assessment, the final step of the program. In hazard assessment, the endocrine-disrupting substance is identified and the relationship between dose and effect is established.

EDSTAC recommended that EDSP sort the universe of chemicals into four categories based on existing data:

Category 1—exempted chemicals or those unlikely to produce an endocrine effect.

Category 2—chemicals with insufficient existing data to determine the likelihood of estrogen, androgen, and thyroid system interaction and, hence, for which Tier 1 screening would be required.

Category 3—chemicals with sufficient existing data to meet Tier 1 screening requirements. Chemicals in this category may move directly to Tier 2.

Category 4—chemicals with sufficient existing data to bypass Tier 1 screening and Tier 2 testing and move directly to hazard assessment.

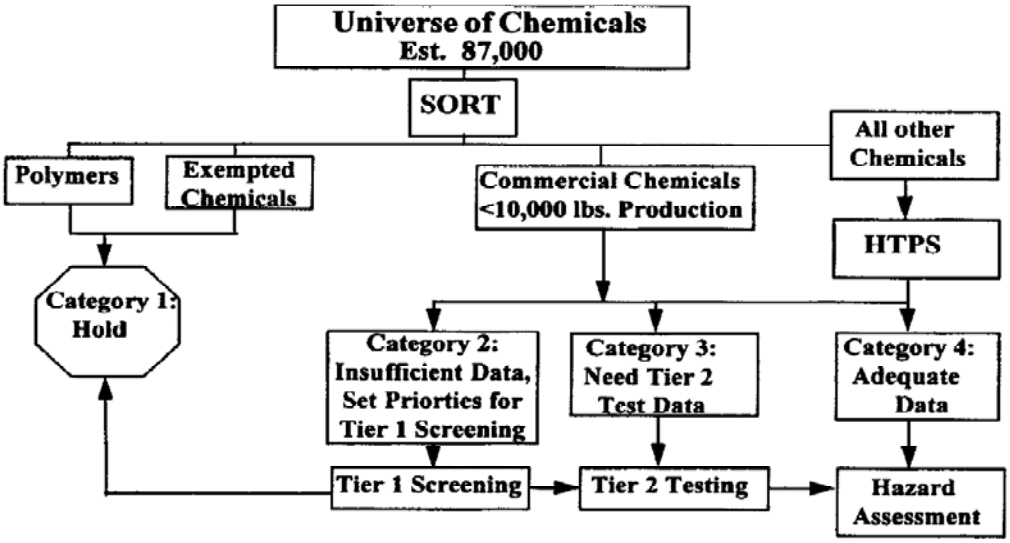
EDSTAC anticipated that the large number of chemicals required to undergo Tier 1 screening could overwhelm available resources. As a result, EDSTAC recommended that chemicals be prioritized based on exposure-related information, effects-related information, and statutory criteria, and then phased into Tier 1 screening.

EDSP Proposed Statement of Policy

EPA established the EDSP in the Office of Science, Coordination, and Policy within the Office of Chemical Safety and Pollution Prevention[2] (OCSPP) and published a Proposed Statement of Policy in 1998. The Agency based this policy on EDSTAC's recommendations. From fiscal year (FY) 1999 to FY 2009, EPA's EDSP received $86.6 million in program funding. Figure 1 provides a flow chart overview of EPA's EDSP as set forth in the Agency's 1998 Proposed Statement of Policy.

[2] This office was previously named the Office of Prevention, Pesticides and Toxic Substances. The name changed to the Office of Chemical Safety and Pollution Prevention on April 22, 2010.

Figure 1: Proposed screening program overview



Source: EPA's Proposed Statement of Policy, Federal Register, Vol. 63, No. 248, December 28, 1998.

Joint Subcommittee

After Congress passed the FQPA and SDWA amendments in 1996, EPA asked the Federal Insecticide, Fungicide, and Rodenticide Act Scientific Advisory Panel (SAP) and EPA's Science Advisory Board (SAB) to form a joint subcommittee to review a set of scientific issues concerning the development of the EDSP. The joint subcommittee also evaluated EDSTAC's recommendations in its 1999 report. The subcommittee supported EDSTAC's recommendation that EPA evaluate potential endocrine disruptors for estrogenic, androgenic, and thyroid hormone effects, but cautioned EPA against expanding to additional hormone systems until knowledge of these systems and assay techniques matured. The joint subcommittee also recommended that EPA review screening data for 50 to 100 compounds, revise its process as necessary, and eliminate methods that do not work.

Three Major Parts of EDSP Implementation

The Agency is implementing EDSP in three major parts:

- Assay development and validation
- Chemical selection
- Development of program policies and procedures

Assay Development and Validation

In accordance with FQPA, assays first had to be validated prior to their use in EDSP. EPA devised a five-step process designed to meet the requirements that assays be both reliable and relevant. Table 1 shows the key steps in assay validation.

Table 1: The assay validation process

Step	Description of key activities
Method development	The Agency creates an initial testing protocol to be used for the prevalidation studies.
Prevalidation	The Agency optimizes and standardizes the protocol and develops preliminary data on reproducibility within a single laboratory (e.g., performance criteria).
Validation	Validation tests the transferability of the protocol to other laboratories, determines the reliability of the protocol, and further documents its relevance.
Peer review	Independent experts evaluate the scientific and technical work products.
Regulatory acceptance and implementation	The Agency informs the public which assays will be required for chemicals as mandated under the FQPA.

Source: OIG-created table based on EPA's EDSP website: http://www.epa.gov/scipoly/oscpendo/pubs/assayvalidation/status.htm.

EPA established two successive federal advisory committees, the Endocrine Disruptor Methods Validation Subcommittee and the Endocrine Disruptor Methods Validation Advisory Committee, to advise the Agency about assay validation. The Agency announced the availability of the Tier 1 screening battery of 11 validated assays and related test guidelines in October 2009. The Agency is still validating four of five Tier 2 assays.

Chemical Selection

In December 2002, EPA issued a Federal Register notice asking for public comment on its proposed chemical approach for the initial round of screening. EPA proposed to initially (1) select and screen approximately 50 to 100 chemicals to help further refine the program, and (2) focus only on pesticide chemicals to concentrate on a smaller and more manageable universe of chemicals. In 2005, EPA published its chemical selection approach for the initial round of screening. In 2007, EPA issued for public comment the draft list of pesticide chemicals to be considered for screening. After extended public comment, the Agency released the final list of 67 pesticide chemicals in 2009.

To further satisfy the FQPA mandate, the Agency plans to issue orders for pesticides when they enter registration review. The Registration Review Program requires all currently registered pesticides to be reevaluated to ensure they meet current scientific and regulatory standards.

Development of EDSP Policies and Procedures

In addition to the 1998 Proposed Statement of Policy and several Federal Register notices about selecting and prioritizing chemicals, the Agency issued a Federal Register notice in December 2007 asking for public

comment on the draft policies and procedures for initial Tier 1 screening. The Agency issued its revised policies and procedures for initial Tier 1 screening in April 2009, which included the statutory requirements associated with issuing test orders.

Office of Research and Development

EPA's Office of Research and Development (ORD) provided support for EDSP. The Agency established the Endocrine Disruptor Research Program in 1995, and ORD identified endocrine disruptors as one of its top six research priorities in 1996. Since 1998, ORD has issued a research plan and two multiyear plans concerning endocrine disruptors. Within the multiyear plans, ORD has specifically identified the support of EDSP as one of its three long-term goals. Toward this goal, ORD conducted the underlying research to develop 9 of the 11 assays used for Tier 1 screening and 4 of the 5 assays used for Tier 2 testing, and helped develop standardized protocols for Tier 1 and Tier 2 assays. From FYs 1999 to 2010, ORD received $131.5 million for endocrine disruptor research.[3]

Natural Resources Defense Council Settlement Agreement

In August 1999, the Natural Resources Defense Council (NRDC) and several other parties filed a lawsuit against EPA for failing to meet a statutory deadline to implement EDSP by August 1999. The case was settled in January 2001 when the parties signed a settlement agreement that required EPA to, among other things, use its best efforts to:

- Publish and solicit public comment on an initial list of chemicals for screening by December 31, 2002.
- Validate all Tier 1 assays except the frog thyroid assay[4] by December 31, 2003.
- Require testing for certain Tier 1 screens by December 31, 2003.
- Require testing for certain Tier 2 tests by December 31, 2004.
- Validate the Tier 2 mammalian two-generation assay by December 31, 2004.
- Validate other Tier 2 assays by December 31, 2005.

Further, EPA committed to provide NRDC with semiannual updates if EPA anticipated it would not meet its estimated completion dates.

[3] Not all of the $131.5 million for endocrine disruptor research directly supported EDSP. For example, only $14.6 million of the $64 million ORD received for endocrine disruptor research from FYs 2004 to 2009 was budgeted to support endocrine disruptor screening and testing.

[4] In early 2003, EPA decided not to continue the development of the frog thyroid assay. The Agency replaced the assay with an amphibian metamorphosis assay.

Noteworthy Achievements

Working with ORD, contract labs, and various stakeholders, EDSP coordinated the development of screening assays to identify the potential to interact with the estrogen, androgen, or thyroid hormonal systems. As a result of this effort, 11 Tier 1 assays were validated by 2009 to screen chemicals for potential endocrine-disrupting effects. Once these assays were validated, EPA issued 758 test orders[5] to registrants, manufacturers, and importers of the 67 pesticide chemicals selected for initial screening.

To promote transparency, EPA established a database on its website in 2009 that shows Congress, industry, and the public the status of the EDSP test orders for the 67 pesticide chemicals for which the Agency has released Tier 1 testing orders. The database includes the name of each chemical, the test order number, the company name and number, the 90-day response due date, the status of testing, and the test order due date. EPA updates the database weekly. EPA established another database in 2010 that includes the order recipient's response to the test orders, EPA's response, and the summary of EPA's response to other scientifically relevant information.

Scope and Methodology

To address our objectives, we reviewed EPA strategic planning documents, EPA annual performance plans, EPA's EDSP website, Federal Register notices, federal advisory committee reports, and applicable legislation. We also analyzed EPA's settlement agreement with NRDC and subsequent status reports, EDSP work plans, ORD's research and multiyear plans, and the Board of Scientific Counselors' reviews of EPA's Endocrine Disruptor Research Program. We also reviewed the Office of Management and Budget's 2004 Program Assessment Rating Tool review of endocrine disruptors and EPA's 2005 Strategic Review of EDSP. We discussed and evaluated endocrine disruptor management controls, assay validation and testing, program progress and challenges, organizational structure, oversight, legislative developments, research, and other endocrine disruptor issues with EPA managers and staff from OCSPP, ORD, and Office of Water.

We also discussed these issues with representatives of the NIEHS, the State of Illinois environmental staff, nongovernmental environmental groups (NRDC, The Endocrine Disruption Exchange), an industry association (American Chemistry Council), and academic institutions (University of Massachusetts and North Carolina State University). These entities were selected because of their

[5] Test order recipients must report to EPA, within 90 days of test order issuance, whether they will generate new data, enter into a joint data agreement with other test order recipients, submit or cite existing data, or voluntarily request to cancel their pesticide registration. If test order recipients choose to generate data or enter into a joint data agreement, they must submit the requested data in the test order within 2 years of the issuance of the test order.

involvement in EPA's endocrine disruptor advisory committees, research expertise, or early development of an endocrine-disrupting chemicals' strategy. We attended the February 25, 2010, U.S. House of Representatives, Committee on Energy and Commerce, Subcommittee on Energy and the Environment hearing, "Endocrine Disrupting Chemicals in Drinking Water: Risks to Human Health and the Environment." We did not identify any previous EPA OIG or U.S. Government Accountability Office audit/evaluation reports on EPA's EDSP issued from 1996 to August 2010.

We conducted our work from December 2009 to February 2011 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform our review to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our objectives.

Review of Management (Internal) Controls

Generally accepted government auditing standards require that auditors obtain an understanding of management controls significant to the audit objectives and consider whether specific management control procedures have been properly designed and placed in operation. We reviewed EDSP management controls, including program planning, policies and procedures, and outcome and output performance measures. In addition, we reviewed compliance with applicable laws, including FQPA. Our findings pertaining to specific internal and management controls are discussed in chapter 2 of this report.

Chapter 2
EPA's Endocrine Disruptor Screening Program Should Establish Management Controls to Ensure Results

Fourteen years after passage of the FQPA and SDWA amendments, EDSP has not determined whether any chemical is a potential endocrine disruptor.[6] EDSP has not developed a management plan laying out the program's goals and priorities or established outcome performance measures to track program results. EDSP missed milestones for assay validation and chemical selection set forth in the 2001 NRDC settlement agreement. Completed activities exceeded their targets by about 4½ to 6 years. An EDSP manager explained that EDSP was unaware of the complexities, resources, and time inherent in validating assays until years after the 2001 settlement agreement was signed. However, EDSP did not substantially revise its milestones in its status reports to NRDC for completing assay validation. In addition, EDSP has not created a final statement of policy, finalized specific procedures to evaluate Tier 1 screening results, or established specific procedures to evaluate Tier 2 testing results. We acknowledge the difficulties involved in establishing an effective endocrine disruptor screening program. An EDSP manager told OIG that EDSP plans to develop a management plan. However, EDSP had not done so at the time of our review. We believe EDSP should develop and implement plans and performance measures to establish management control and accountability within the program.

Concern Over Delays in Program Progress

EPA's EDSP has missed the milestones for key activities set forth in the 2001 NRDC settlement agreement and in its status reports to NRDC. The program also has not set milestones for other key activities. EDSP managers provided us with reasons why program implementation has gone slowly. These reasons included (1) being unaware of the complexities, resources, and time inherent in validating assays; (2) problems hiring contractors; and (3) difficulties with contractors being unable to do the work needed. Concerned with EDSP progress, Congress instituted reporting requirements in 2007 and specified deadlines for certain activities in 2009. For example, in 2009, the House Committee on Appropriations directed EPA to develop a new list of chemicals for testing as well as develop criteria for analysis of the Tier 1 data received from industry by October 30, 2010. On November 17, 2010, EDSP published "Second List of Chemicals for Tier 1

[6]EDSP is not the only mechanism available to the Agency to regulate endocrine-disrupting chemicals. According to EPA's August 2010 Report to Congress on Pesticide Licensing and Endocrine Disruptor Screening Activities, through September 30, 2009, EPA regulated 79 of the 1,095 pesticides subjected to Federal Insecticide, Fungicide, and Rodenticide Act regulatory review on the basis of endocrine effects. These pesticides were not screened, tested, or regulated as the result of EDSP actions.

Screening" in the Federal Register for public comment. EDSP published "Weight of Evidence Guidance for Evaluating the Results of Tier 1 Screening To Identify Candidate Chemicals for Tier 2 Testing" in the Federal Register for public comment on November 4, 2010.

Key EDSP Milestones Unmet or Not Established

EDSP established milestones for the publication of a draft list of chemicals for testing, the completion of Tier 1 assay validation, and the start of Tier 1 and Tier 2 testing in the 2001 NRDC settlement agreement. However, EDSP did not meet these milestones. The difference between the actual completion dates and the 2001 NRDC settlement agreement milestones ranged from about 4½ to 6 years. The Agency also did not meet key milestones for completing assay validations provided in its updates to NRDC. The initial milestones for Tier 1 assays provided to NRDC in updates were missed by about 2 to 4 years. EDSP extended its milestones for completing validation of Tier 1 assays multiple times. For example, EDSP extended the milestones in 9 of 11 updates it provided to NRDC for the estrogen receptor binding assay by a total of 4½ years (54 months). This trend is continuing for the validation of Tier 2 assays. Furthermore, the Agency has yet to set milestones for other key activities, including publication of a third list of chemicals for screening and the development of criteria to analyze Tier 2 testing/hazard assessment results. Table 2 shows the NRDC settlement agreement milestones and actual completion dates for key EDSP activities as of October 2010. Examples follow the table.

Table 2: NRDC settlement agreement milestones and actual completion dates

Key activities	2001 NRDC settlement agreement milestone date[a]	Actual completion date	Length of delay
Publication of draft initial chemicals list for Tier 1 and public comment initiation	December 31, 2002	June 18, 2007	4 years, 6 months
Completion of Tier 1 assay validation	December 31, 2003	October 21, 2009	5 years, 10 months
Start of testing using certain Tier 1 screens	December 31, 2003	October 21, 2009	5 years, 10 months
Start of testing using certain Tier 2 tests	December 31, 2004	(b)	6 years, 2 months[b]

Sources: OIG-created table based on NRDC settlement agreement, January 2001, Federal Register Notice Vol. 72, No. 116, and Federal Register Notice Vol. 74, No. 202.

[a] NRDC settlement agreement milestones were later than the milestones proposed in the 1998 EDSTAC report and the 1998 Proposed Statement of Policy.
[b] Not Completed as of February 2011.

EPA informed NRDC on December 23, 2002, that it was delaying publication of a proposed initial list of chemicals for EDSP screening 8 days prior to the date EPA had agreed to publish the list. The Agency wanted to obtain public comment on a simplified chemical selection approach, which focused on using exposure data rather than exposure and effects data. The simplified approach also proposed that public nominations be excluded. According to the Agency, one of the key

reasons for the change was that prospective chemical selection methods envisioned to be able to expeditiously obtain effects data for large numbers of chemicals were not ready for use. Another reason was that EPA received comments from chemical manufacturers that publishing the list of chemicals too far in advance might lead users not to purchase their chemicals. EPA's December 2002 status report to NRDC stated EDSP believed that the manufacturers' concerns were unfounded from a scientific or risk basis. However, EDSP decided that the public could misinterpret the Agency's basis for selecting chemicals, so publication was delayed. On December 30, 2002, EPA published a Federal Register notice asking for public comment on its proposed chemical selection approach. More than 4 years passed between EPA's decision to simplify its approach and the publication of a draft list in June 2007. According to EDSP managers, the delay in publishing the draft list did not hinder the overall program pace because assay validation had to be completed before screening could move forward. EDSP management decided in 2004 that it would not publish the draft list until 1 year before validation was completed.

Validation of Tier 1 assays took almost 6 years longer than estimated in the 2001 NRDC settlement agreement. In his February 2010 testimony before a House Energy and Commerce subcommittee**,** the EPA Deputy Assistant Administrator for OCSPP explained that because of the many complexities in methods development and validation of Tier 1 assays, validation took 10 years for Tier 1 assays and is ongoing for Tier 2 assays. For example, to accomplish assay validation, EDSP enlisted the assistance of contract laboratories. According to EDSP managers, they had problems with hiring contractors and difficulties with contractors being able to do the work needed. Furthermore, the Agency believed it would take, at most, 1 year for prevalidation of the assays and 1 year to validate the studies. However, these processes took much longer than anticipated.

An EDSP manager explained that EDSP was unaware of the complexities, resources, and time inherent in validating assays until several years after the 2001 NRDC settlement agreement was signed. However, EDSP did not substantially revise its milestones to complete assay validation. Instead, EDSP revised its estimated completion dates for Tier 1 assays in a piecemeal fashion in its status updates to NRDC. As an example, table 3 shows how EDSP extended the estimated completion dates for 9 of 11 updates EPA provided to NRDC for the estrogen receptor binding assay, collectively a delay of 4½ years (54 months).

Table 3: Reported delays of the estrogen receptor binding assay

Assay	Date of status report to NRDC	Estimated completion date of assay validation	Delay from previous status report
Estrogen receptor binding assay	May 22, 2003	October 2004	N/A
	January 23, 2004	April 2005	6 months
	March 8, 2005	January 2006[a,b]	9 months
	August 1, 2005	January 2006 [a,b]	No change
	February 15, 2006	January 2007[b]	12 months
	July 20, 2006	January 2007[b]	No change
	January 31, 2007	July 2007[b]	6 months
	May 29, 2007	September 2007[b]	2 months
	December 28, 2007	March 2008[b]	6 months
	June 4, 2008	December 2008	9 months
	December 17, 2008	March 2009	3 months
	June 17, 2009	Completed—April 2009	1 month
	Total delay		**54 months**

Source: OIG-created table based on EPA status reports to NRDC from May 2003 to June 2009.

[a] The NRDC status reports for March 8, 2005, and August 1, 2005, stated that estimated date of validation completion was July/August 2005 but completion could be delayed until January 2006 if an additional study was required. We used the latest reported date in the table.
[b] The dates listed are estimates for interlab validation not including peer review.

EPA initially expected to validate the estrogen receptor binding assay through the review of existing data and literature rather than an intensive multilaboratory validation study. An expert panel determined that data were insufficient to validate the assay and recommended that a multilaboratory study be done. EPA initiated a multilaboratory validation study in August 2002 and estimated that peer review would be completed by October 2004. However, the assay was not ready for use until April 2009, a 4½-year delay. EDSP's reports to NRDC noted problems such as labs not producing reasonable results, equipment failures, and contract issues.

The slippage in estimated completion dates also occurred in other Tier 1 assays. For example, table 4 shows several assays and the differences between the estimated date of completion of peer review in the May 22, 2003, status report to NRDC and the completion of peer review as reported in the June 17, 2009, status report.

Table 4: Delays in completion of the peer review of selected Tier 1 assays

Assays	Estimated date of peer review	Peer review completed	Elapsed time
Hershberger assay	March 2004	September 2006	2½ years
Male and female rodent pubertal assays	3rd/4th quarter 2004	November 2007	Nearly 3 years
Aromatase assay	3rd/4th quarter 2004	January 2008	About 3 years
Fish reproductive screening assays	3rd/4th quarter 2004	January 2008	About 3 years

Sources: OIG-created table based on EPA's status reports to NRDC, May 22, 2003, and June 17, 2009.

While Tier 1 assays have all been validated, four of five Tier 2 assays have not been validated. Their completion dates continue to be revised. For example,

table 5 shows delays in Tier 2 assay validations of 1½ to 2 years as estimated by EDSP from 2006 to 2009. If delays continue, some Tier 2 assays may not be validated when Tier 2 testing is scheduled to begin in 2012.

Table 5: EPA's estimated timeframes for validation completion of Tier 2 assays

Assays	Estimated date of validation completion (NRDC status report February 2006)	Estimated date of validation completion (NRDC status report December 2009)[a]	Change in estimated completion dates
Fish-two generation	December 2009	July 2011	About 1½ years
Avian-two generation	December 2009	December 2011	2 years
Mysid-two generation	December 2008	December 2010	2 years
Amphibian growth and reproduction	December 2009	August 2011	About 1½ years

Source: OIG-created table based on EPA's status reports to NRDC, February 15, 2006, and December 31, 2009.

[a]Estimated date of completion included interlab validation not including peer review.

We are concerned about the continuing program delays. EPA should develop a management plan for EDSP so that EPA's leadership, Congress, and the public can assess whether the goals and key activities of the program are being achieved within reasonable cost and schedule.

Congress Directs EPA to Action Due to Lack of Program Progress

In recent years, Congress has expressed concerns about EDSP's lack of progress and has attempted to spur the Agency into action. For example, in the House Appropriations Committee Report for FY 2008 (Report 110-187), Congress stated that EPA was taking too long to implement EDSP and stated its expectation that EPA would accelerate the schedule for completing assay validation. In an effort to get results, Congress required the Agency to report semiannually initially and then annually on a number of EDSP-related items, including endocrine disruption determinations for pesticide regulation and the status of assay validations. After reviewing program progress, in 2009 Congress directed the program to take several actions in its FY 2010 House Appropriations Committee Report (House Report 111-180). Specifically, Congress directed EPA's EDSP to:

- Create a database of the initial pesticide chemicals to be screened in EDSP, and make the database available on EPA's website.
- Develop and publish criteria within 1 year of enactment (i.e., by October 30, 2010) for evaluating the results of Tier 1 screening and for determining whether a chemical should undergo Tier 2 analysis.
- Publish within 1 year of enactment (i.e., by October 30, 2010) a second list of no less than 100 chemicals for screening that includes drinking water contaminants, and issue 25 orders per year for the testing of these chemicals.
- Timely reevaluate the battery of screens, replacing outdated screens with updated, more efficient screens that have been validated.

The Agency met the first 2009 congressional direction by creating a database of 67 pesticide chemicals that are being currently screened. The database is updated weekly and can be found on EPA's EDSP website. The Agency also recently published two documents in the Federal Register for public comment: "Weight of Evidence Guidance for Evaluating the Results of Tier 1 Screening To Identify Candidate Chemicals for Tier 2 Testing," on November 4, 2010, and "Second List of Chemicals for Tier 1 Screening," on November 17, 2010.

EPA Has Not Developed Key Management Controls for EDSP

The Agency has not developed the key management controls needed to implement EDSP and carry out its statutory and discretionary authority under FQPA, SDWA amendments, and the Toxic Substances Control Act. Management controls help provide reasonable assurance that the goals and objectives of a program will be accomplished and that resources are allocated efficiently and effectively. They also help ensure accountability and enhance transparency of the steps needed to implement a program and achieve results over time.

EDSP Has Not Established Key Plans, Policies, and Procedures to Implement the Program

EDSP has not developed a management plan or a final statement of policy, has not finalized specific procedures to evaluate Tier 1 screening results, and has not established criteria to evaluate Tier 2 testing results with associated milestones to implement EDSP over time. Such plans, policies, and procedures help programs establish accountability, track progress, and enhance transparency.

Management controls are the organization, policies, and procedures used by agencies to reasonably ensure that (i) programs achieve their intended results; (ii) resources are used consistent with agency mission; (iii) programs and resources are protected from waste, fraud, and mismanagement; (iv) laws and regulations are followed; and (v) reliable and timely information is obtained, maintained, reported and used for decision making. Management controls, in the broadest sense, include the plan of organization, methods and procedures adopted by management to ensure that its goals are met. Management controls include processes for planning, organizing, directing, and controlling program operations.

Source: Office of Management and Budget Circular A-123, *Management Accountability and Control. (June 21, 1995.)*

The 1998 EDSTAC report developed an implementation path for EDSP. EPA published a Proposed Statement of Policy in 1998 that closely followed this guidance. In 1999, the SAB/SAP joint subcommittee issued its final report recommending that EPA review screening data from 50 to 100 compounds. EPA decided to follow this recommendation and revised its chemical selection process, which deviated from the process laid out in the 1998 proposed policy. However, the Agency did not develop a management plan or revise its 1998 Proposed Statement of Policy to establish a road map for the program, even when key program changes occurred. Without a road map for the program, the Agency announced new program developments in a piecemeal fashion through periodic Federal Register notices.

A management plan would help EPA's leadership, Congress, and the public assess whether the goals and key activities of the program are being achieved within reasonable cost and schedule. The plan also needs to:

(1) include specific final criteria for evaluating chemicals after Tier 1 screening and establish specific criteria for evaluating chemicals after Tier 2 testing/hazard assessment phases;
(2) define the universe of chemicals EDSP plans to evaluate for testing; and
(3) state what method EDSP will use to prioritize chemicals in the future.

Criteria for Evaluating Chemicals Need to Be Finalized

After nearly 14 years, and after having issued test orders for the first 67 chemicals to undergo Tier 1 screening, EPA has neither finalized specific criteria for evaluating chemicals after Tier 1 screening is completed, nor established specific criteria for evaluating chemicals after Tier 2 testing is completed, including carrying out the hazard assessment phase of the program.

The 2010 House Appropriations Committee language directed EPA to develop criteria to evaluate the results of Tier 1 screening within 1 year of enactment (October 30, 2010). The Agency published draft Tier 1 evaluation criteria in the November 4, 2010, Federal Register for public comment, but EDSP managers estimated that the criteria will not be finalized until 2011. EPA is scheduled to begin receiving Tier 1 screening data from industry in October 2011. If EPA does not finalize specific criteria before then, the Agency will receive Tier 1 test order data without having formal procedures to evaluate it, increasing the risk of the appearance of bias[7] and further delaying program results. We believe the program should have established criteria for the evaluation of chemicals and should not have had to be prompted by Congress to do so.

Universe of Chemicals for Screening and Testing Not Clearly Defined

EPA has not clearly defined the universe of chemicals it plans to evaluate over time. EDSTAC estimated an initial universe of more than 87,000 chemicals, but narrowed this estimate to 62,000 after eliminating some substances that were unlikely to cause endocrine-mediated effects. In early 2010, an OCSPP official estimated that approximately 40,000 chemicals needed to be screened and tested for potential endocrine-disrupting effects. An EDSP manager was unsure how these 40,000 chemicals were determined, but noted that he believed the number of chemicals that should be screened and tested is probably lower than 40,000.

We understand that the universe of substances with potential to cause endocrine-mediated effects may change over time. However, the basis for deleting potential

[7] Potential exists for the Agency to be accused of bias if it waits until after it sees the data to decide how it will proceed.

substances should be clearly defined. The Agency must test all pesticides as required by FQPA. EPA needs to be transparent regarding how it will use its discretionary authority to define what chemicals will be screened. EDSP needs a management plan to define how many chemicals should be screened as of a particular date so the Agency can prioritize those chemicals based on their likelihood of being endocrine disruptors. Absent a better-defined universe, the Agency cannot estimate (1) the amount of resources it will take to effectively sort and prioritize potential endocrine disruptors for screening, and (2) when screening and testing will be completed.

EDSP Needs to Consistently Prioritize Chemicals Using Recommended Techniques

Besides defining the universe of chemicals for testing, EDSP's management plan needs to define what methods it will use to objectively prioritize chemicals so that those chemicals that are likely endocrine disruptors are evaluated first. As stated in the EDSTAC report, screening and testing can be a resource-intensive process for both the public and private sectors, so priorities must be set carefully to ensure that the chemicals of greatest concern are given priority. However, the Agency did not use the risk-based approach or public nomination process recommended by the EDSTAC and SAB/SAP joint subcommittee.

The 1998 EDSTAC report recommended that the Agency prioritize chemicals based on their potential for adverse effects, widespread exposure to humans and the environment, and statutory criteria. EDSTAC recommended the use of various sources, including effects data, exposure data, and public nominations. The SAB/SAP joint subcommittee also approved this approach, which was adopted by the Agency in its 1998 Proposed Statement of Policy. The SAB/SAP joint subcommittee found that the chemical selection approach should be based on both effect and exposure data following guidance in National Research Council and EPA risk assessment literature.

However, the Agency deviated from the recommended approach when selecting its first list of chemicals for initial screening. EPA decided not to use effects data because prospective chemical selection methods envisioned to be able to obtain effects data for large numbers of chemicals were not ready for use. The Agency also stated that it "lacked sufficient information and experience to determine whether a chemical should be designated as a potential endocrine disruptor." EPA also deferred accepting public nominations to keep the initial effort simpler and to ensure a relatively prompt timeline for the first suite of Tier 1 screening results. Congress directed EPA to develop the second list of 100 chemicals for initial screening and testing by October 30, 2010. EDSP again deviated from the recommended approach. In addition to not using effects data or public nominations, EDSP did not use exposure data to prioritize the candidate chemicals in relation to one another.

We believe it is important for EDSP to prioritize chemicals using the effects, exposure, and public nomination-based approach as recommended by EDSTAC and approved by the SAB/SAP joint subcommittee. Using the suggested method, the Agency could develop a list of chemicals for screening that are more likely to be potential endocrine disruptors. Irrespective of the selection method the Agency chooses, it needs to develop a management plan stating how it will objectively prioritize chemicals in the future, in order to promote consistency and transparency.

According to an EDSP manager, EDSP is planning to develop a management plan that includes estimates of budget requirements covering a longer time horizon. We believe implementing such a plan could improve the accountability and transparency of the program.

EDSP Has Not Established Key Performance Measures

EDSP has not established short-term, intermediate, and long-term outcome performance measures to track intended results of the program. Since FY 2007, EDSP measured its program progress with two output performance measures: one tracking efficiency and another tracking the number of validated assays. EDSP needs a management plan to establish what results the program wants to achieve and then develop outcome performance measures to track the results of the program. In addition, EDSP needs additional output measures to track the progress of program activities that lead to program results.

Key performance measurement terms and definitions

Term	Definition
Outputs	*Quantitative or qualitative measures of activities, work products, or actions*
Short-term outcomes	*Changes in learning knowledge, attitude, skills, or understanding that result from program activities and are needed to achieve the end outcome*
Intermediate outcomes	*Changes in knowledge, behavior, or conditions that result from program activities and are needed to achieve the end outcome*
Long-term outcomes	*The ultimate outcomes of program activities*

Sources: OIG-created table based on OIG Report No. 2006-P-00006, *EPA Performance Measures Do Not Effectively Track Compliance Outcomes,* December 15, 2005; Indiana Office of Management & Budget and State Personnel Department Performance Measurement Seminar, May 18, 2007.

For the last 3 years, EDSP measured its performance using two output measures. Prompted by the Office of Management and Budget, EPA created an output measure to monitor EDSP efficiency, which focused on reducing contract costs 1 percent per study for assay validation. EDSP met this goal every year and significantly exceeded it in FYs 2007 and 2009. However, an EDSP manager said that the measure is meaningless to them because it does not measure the

efficiency of EDSP. EDSP management recommended that the measure be discontinued in FY 2012. According to EDSP managers, the Office of Management and Budget has agreed that the measure does not seem useful at this time. Table 6 shows the target and actual percent reduction efficiency measures from FY 2007 through FY 2009.

Table 6: EDSP efficiency measure from FYs 2007 through 2009

Measures	FY 2007		FY 2008		FY 2009	
	Target	Actual	Target	Actual	Target	Actual
Contract cost reduction per study for assay validation efforts in the EDSP	1%	63%[a]	1%	3%	1%	38%

Source: Office of Science Coordination and Policy, OCSPP, EPA.

[a] According to EDSP managers, this information should have been reported as 37 percent.

EDSP's other output measure measured the cumulative number of assays that have been validated (numerator) versus the total number of assays under consideration (denominator). Table 7 shows the cumulative assay results from FYs 2006 through 2009. EDSP missed its targeted goals in FYs 2006 and 2007 but came close to meeting its targets in FYs 2008 and 2009. This measure was dropped for FY 2011 because the Tier 1 assays have been validated, which was the focus of the measure, according to EDSP managers.

Table 7: EDSP cumulative assay measure from FYs 2006 through 2009

Measures	FY 2006		FY 2007		FY 2008		FY 2009	
	Target	Actual	Target	Actual	Target	Actual	Target	Actual
Cumulative number of assays that have been validated	11/20	2/21	8/20	3/20	13/20	12/20	14/19	13/19

Source: Office of Science Coordination and Policy, OCSPP, EPA.

Notes: No assays were validated in FY 2005, which is the baseline. The denominator dropped from 21 to 20 in FY 2007 because EPA decided to discontinue efforts to validate the sliced testes assay on the basis of recommendations from the Endocrine Disruptor Methods Validation Advisory Committee. The denominator dropped from 20 to 19 in FY 2009 because the in utero lactation protocol demonstration study confirmed that the assay was too complex and time consuming to be considered as a Tier 1 screen.

EDSP has proposed three new performance measures for FY 2012:

1. Number of chemicals for which EDSP decisions have been completed.
2. Number of chemicals for which EDSP Tier 1 test orders have been issued.
3. Number of screening and testing assays for which validation decisions have been reached.

The above measures proposed by EDSP are output measures. EDSP needs to establish outcome performance measures to ensure program results track to key program activities, such as Tier 2 testing and progress toward hazard assessment, and to assess whether program activities are leading to desired results. Developing a management plan would ensure the program's goals and priorities are transparent so EPA's leadership and Congress can assess whether the goals of the program are being achieved within reasonable cost and schedule.

Conclusions

EDSP has made little progress in identifying endocrine-disrupting chemicals. While we acknowledge that EDSP encountered difficulties and delays, its lack of progress is also due to EPA's lack of management control over the program. OCSPP leadership should improve its oversight of the program to ensure that proper management controls are in place so that progress and accountability can be determined. In our opinion, EDSP will not be able to establish an effective screening and testing program without establishing program control and accountability. As a result, achieving the goal of protecting human health and the environment from endocrine disruptors will continue to be delayed.

Recommendations

We recommend that the Assistant Administrator for Chemical Safety and Pollution Prevention:

1. Define and identify the universe of chemicals for screening and testing to establish the scope of the program.

2. Develop and publish a standardized methodology for objectively prioritizing the universe of chemicals for screening and testing, including elements recommended by the federal advisory committees such as use of effects and exposure data, as well as public nominations.

3. Finalize specific criteria for evaluating the Tier 1 screening data received and establish specific criteria for evaluating the Tier 2/hazard assessment testing data received.

4. Develop short-term, intermediate, and long-term outcome performance measures, and additional output performance measures, with appropriate targets and timeframes, to measure the progress and results of the program.

5. Develop and publish a comprehensive management plan for EDSP, including estimates of EDSP's budget requirements, priorities, goals, and key activities covering at least a 5-year period.

6. Annually review the EDSP program results, progress toward milestones, and achievement of performance measures, including explanations for any missed milestones or targets.

Agency Comments and OIG Evaluation

The Agency generally agreed with our findings and conclusions, and stated that our recommendations were consistent with the Agency's vision for the future management of the EDSP. OCSPP's responses to Recommendations 4 and 5 were sufficient to meet the intent of the recommendations. However, OCSPP's responses to recommendations 1, 2, 3, and 6 did not provide sufficient information for us to determine whether the Agency's actions will meet the intent of the recommendations. Therefore, recommendations 1, 2, 3, and 6 will remain unresolved pending receipt of additional information or clarification from OCSPP. Appendix A contains the Agency's response to our draft report. Appendix B has our detailed evaluation of that response.

Status of Recommendations and Potential Monetary Benefits

RECOMMENDATIONS						POTENTIAL MONETARY BENEFITS (in $000s)	
Rec. No.	Page No.	Subject	Status[1]	Action Official	Planned Completion Date	Claimed Amount	Agreed-To Amount
1	19	Define and identify the universe of chemicals for screening and testing to establish the scope of the program.	U	Assistant Administrator for Chemical Safety and Pollution Prevention			
2	19	Develop and publish a standardized methodology for objectively prioritizing the universe of chemicals for screening and testing, including elements recommended by the federal advisory committees such as use of effects and exposure data, as well as public nominations.	U	Assistant Administrator for Chemical Safety and Pollution Prevention			
3	19	Finalize specific criteria for evaluating the Tier 1 screening data received and establish specific criteria for evaluating Tier 2/hazard assessment testing data received.	U	Assistant Administrator for Chemical Safety and Pollution Prevention			
4	19	Develop short-term, intermediate, and long-term outcome performance measures, and additional output performance measures, with appropriate targets and timeframes, to measure the progress and results of the program.	O	Assistant Administrator for Chemical Safety and Pollution Prevention			
5	19	Develop and publish a comprehensive management plan for EDSP, including estimates of EDSP's budget requirements, priorities, goals, and key activities covering at least a 5-year period.	O	Assistant Administrator for Chemical Safety and Pollution Prevention			
6	20	Annually review the EDSP program results, progress toward milestones, and achievement of performance measures, including explanations for any missed milestones or targets.	U	Assistant Administrator for Chemical Safety and Pollution Prevention			

[1] O = recommendation is open with agreed-to corrective actions pending
C = recommendation is closed with all agreed-to actions completed
U = recommendation is undecided with resolution efforts in progress.

Agency Comments on Draft Report

March 17, 2011

MEMORANDUM

SUBJECT: Draft Evaluation Report: EPA's Endocrine Disruptor Screening Program Should Establish Management Controls to Ensure More Timely Results

FROM: Stephen A. Owens
Assistant Administrator
Office of Chemical Safety and Pollution Prevention

TO: Wade T. Najjum
Assistant Inspector General
Office of Program Evaluation

Thank you for providing the opportunity to review the draft evaluation report: EPA's Endocrine Disruptor Screening Program Should Establish Management Controls to Ensure More Timely Results. We appreciate OIG's recommendations and believe they identify actions that will be useful as the Agency proceeds with screening a broader spectrum of chemicals, including drinking water contaminants, and as the Agency takes steps to increase the utility of computational toxicology tools in the Endocrine Disruptor Screening Program (EDSP). This memorandum provides comments on the OIG's recommendations and identifies the actions the Agency commits to take in response to the recommendations, including planned completion dates for each action.

We note that OIG acknowledged in their report the significant difficulties involved in implementing an effective EDSP. The unpredictable challenges inherent in a multistep, iterative validation process were the most important factor affecting the overall timeline of the EDSP. Comparisons with other large scale validation efforts, such as those under the auspices of the U.S. Interagency Coordinating Committee on the Validation of Alternative Methods (ICCVAM) and the Organization for Economic Cooperation and Development (OECD), provide some perspective when considering the historical timeline associated with the EDSP. Such comparisons show that EPA's efforts to develop and validate a battery of screening assays for Tier 1 of the EDSP proceeded as quickly or more quickly than equivalent programs administered by other organizations. Furthermore, the extensive, external scientific input and public involvement that was achieved through advisory committees, public notices, and comment opportunities also had a bearing on the EDSP timeline. We believe, however, that the high level of transparency associated with these activities is a noteworthy achievement of the EDSP, was critical to the success of the program, and must continue as the program evolves.

EPA recognizes that the long-term success of the EDSP will depend, in part, on our ability to rapidly integrate new science, such as computational toxicology tools, into the program. The Agency is currently developing a workplan focused on evolving the EDSP to increase the use of molecular, *in vitro,* and computational tools (collectively referred to as computational toxicology tools). We believe that, in developing this workplan, we will identify ways to streamline the process for building confidence in new scientific tools. Maximal integration of computational toxicology tools into the EDSP (e.g., replacement of Tier I *in vivo* assays with one or more *in vitro* assays), if feasible, is viewed as a long-term objective. Therefore, the current workplan will be a key, initial component of a multi-year comprehensive management plan covering at least five years into the EDSP's future. This comprehensive management plan will specifically address budget requirements and performance management and will include components for the continued issuance of test orders, development of a consolidated information infrastructure, and other aspects of the program.

The recommendations contained in your report are consistent with the Agency's vision for the future management of the EDSP. In accordance with EPA Manual 2750, below are our responses for each recommendation contained in the OIG report.

Responses to Specific Recommendations

The report recommends that the Assistant Administrator for Chemical Safety and Pollution Prevention:

1) Define and identify the universe of chemicals for screening and testing to establish the scope of the program.

The Agency believes that the scope of the current EDSP is clearly defined and established by the statutory requirements of the Federal Food, Drug, and Cosmetic Act and the discretionary authority under the Safe Drinking Water Act. Consequently, we believe that the Agency has already identified the current universe of chemicals for screening as all pesticide chemicals (active and inert ingredients) and drinking water contaminants that are either currently regulated with a national primary drinking water regulation or are unregulated contaminants that are listed on the third Contaminant Candidate List.

In the future, however, EPA may conclude it is appropriate to consider EDSP screening for a larger universe of chemicals. EPA believes that its focus should be on developing tools for use in identifying additional chemicals as candidates for screening. As discussed below, EPA intends to use a science-based prioritization process to identify additional chemicals for EDSP screening. Developing this process (as requested in OIG's second recommendation) will be part of the Agency's workplan focused on integrating computational toxicology tools into the EDSP and the multi-year comprehensive management plan for the EDSP. Currently, the workplan and management plan are anticipated to be completed by the end of FY 201l and the third quarter of FY 2012, respectively.

See Appendix B, Note 1, for OIG Response

2) Develop and publish a standardized methodology for objectively prioritizing the universe of chemicals for screening and testing, including elements recommended by the federal advisory committees such as use of effects and exposure data, as well as public nominations.

The Agency agrees that developing a methodology for objectively prioritizing the universe of chemicals for screening is important. As will be described in the Agency's workplan for integrating computational toxicology tools into the EDSP, EPA is moving to a new, flexible process for priority setting. Given the ongoing, scientific research in this area, flexibility will be a key feature of any prioritization methodology so that future developments and alternative approaches can be incorporated as appropriate. For example, we anticipate that an initial prioritized list of chemicals could be developed in the near term (e.g., in FY 2012) using tools such as ToxCast and Quantitative Structure Activity Relationship (QSAR) models in combination with other data. As ToxCast is further developed and additional tools such as ExpoCast become available, the prioritized list would be refined to incorporate these advances in the scientific research. The workplan for integrating computational toxicology tools into the EDSP and the comprehensive management plan for the EDSP will address priority setting and the flexibility needed as current tools are improved and new tools become available. The workplan will identify clear milestones for the release of an initial, prioritized list and opportunities for external scientific input and public involvement (including how chemicals nominated by the public will be addressed in priority setting). Therefore, the workplan and comprehensive management plan will be the Agency's vehicles for responding to this recommendation. Currently, the workplan and management plan are anticipated to be completed by the end of FY 2011 (September 2011) and the end of the third quarter of FY 2012 (June 2012), respectively.

See Appendix B, Note 2, for OIG Response

3) Finalize specific criteria for evaluating the Tier 1 screening data received and establish specific criteria for evaluating Tier 2/hazard assessment testing data received.

As noted by the OIG in the Draft Report, on November 4, 2010, the Agency published and requested public comment on the draft criteria for evaluating Tier 1 screening data (draft "Weight Of Evidence Guidance: Evaluating Results Of EDSP Tier 1 Screening To Identify Candidate Chemicals For Tier 2 Testing"). The Agency is currently evaluating public comments and plans to finalize the criteria by the end of FY 2011 (September 2011).

While the EDSP process for deciding whether individual chemicals will proceed from Tier 1 screening to Tier 2 testing is comparatively new, warranting the publication of evaluation criteria, the Agency and the broader scientific community have a long history of conducting hazard and risk assessments of the type envisioned in Tier 2 of the EDSP.

Existing guidelines, which have been thoroughly vetted through opportunities for public comment, and longstanding transparent practices, guide the conduct of Agency risk assessments. To shed further light on EDSP Tier 2 evaluations, the Agency plans to develop Standard Evaluation Procedures (SEPs) specific to the individual Tier 2 tests. The Agency cannot develop these SEPs until validation of the Tier 2 tests is completed. Therefore, the Agency anticipates completing SEPs for all of the individual Tier 2 tests by the end of the first quarter of FY 2013 (December 2012).

See Appendix B, Note 3, for OIG Response

4) Develop short-term, intermediate, and long-term outcome performance measures, and additional output performance measures, with appropriate targets and timeframes, to measure the progress and results of the program.

In the report, the OIG summarizes two output performance measures used for the EDSP through FY 2010. The Agency reported results for these measures annually, including explanations for missed or exceeded targets. Beginning with FY 2011, we are implementing three new performance measures for the EDSP. These measures better reflect current activities within the program which include continued assay validation work and the issuance of test orders for the first list of chemicals. Two of these measures (number of chemicals for which EDSP Tier 1 test orders have been issued and number of screening and testing assays for which validation decisions have been reached) are output measures. We believe the third measure (number of chemicals for which EDSP decisions have been completed) is consistent with what OIG has defined as a short-term outcome measure.

As we develop our comprehensive management plan, we will re-visit existing performance measures and develop a set of measures that more comprehensively addresses EDSP activities across all offices and includes more outcome measures. Identifying measurable outcomes to assess program performance is generally a very difficult task. Our initial thinking with respect to applying the guidance OIG has provided, in the context of the EDSP, is that short-term outcomes could consist of making weight-of-evidence determinations to decide whether a chemical will move on to EDSP Tier 2 testing (this is currently captured under our existing measures). Intermediate outcomes could consist of the hazard assessments that will result from Tier 2. Long-term outcomes could include a characterization of the regulatory actions that result from EDSP screening and testing, the impact of such actions on human health and the environment and other metrics. These measures will be addressed in EPA's comprehensive management plan which the Agency anticipates releasing by the end of the third quarter of FY 2012 (June 2012).

See Appendix B, Note 4, for OIG Response

5) Develop and publish a comprehensive management plan for EDSP, including estimates of EDSP's budget requirements, priorities, goals, and key activities covering at least a 5-year period.

As the OIG has noted, EPA plans to develop a comprehensive management plan for the EDSP. The aforementioned workplan for integrating computational toxicology tools into the EDSP will be a key, initial component of the comprehensive management plan. The management plan will cover at least 5 years into the future of the EDSP and will include the continued issuance of test orders, the development of a consolidated information infrastructure for the EDSP, and other aspects of the program. The management plan will address budget requirements for the EDSP and performance management, including performance measures and annual reviews. EPA anticipates releasing our management plan by the end of the third quarter of FY 2012 (June 2012).

See Appendix B, Note 5, for OIG Response

6) Annually review the EDSP program results, progress toward milestones, and achievement of performance measures, including explanations for any missed milestones or targets.

The Agency reports annually on the EDSP's performance measures as part of what is currently known as the Annual Performance Review (APR). This reporting includes progress toward annual targets with explanations for any that are missed or exceeded. The Agency will continue this review process and will consider additional options for annual program reviews as we develop the comprehensive management plan for the EDSP. EPA anticipates releasing our management plan by the end of the third quarter of FY 2012.

See Appendix B, Note 6, for OIG Response

Again, we appreciate the opportunity to review and comment on this draft report. Should you have any questions or concerns regarding this response, please contact Steven Knott, Deputy Director, Office of Science Coordination and Policy at (202) 564-0103 or Janet Weiner, Audit Followup Coordinator for OCSPP, at (202) 564-2309.

Appendix B

OIG Evaluation of Agency Comments

General Comments

We appreciate the Agency's comments, and its recognition that our recommendations identify actions that will be useful as the Agency takes steps to implement various aspects of EDSP. Additionally, we appreciate the Agency's explanation of its intent to use ToxCast and other tools that are being developed to replace screening tests for Tier 1 assays in the future. Once the Agency is able to validate the use of ToxCast tests for screening chemicals, it will be appropriate to include it in the EDSP management plan. Until that time, the Agency should include how it will use its existing proven (validated) test procedures to screen chemicals in the EDSP comprehensive management plan. In February 2010, EDSP managers said ToxCast would not be ready for program use for another 5 years. The FQPA requires that EDSP use validated test methods. As such, EPA needs to validate ToxCast before these tests are integrated into the program.

Note 1 - Response to Recommendation 1:

The Agency stated that it believes the EDSP scope is clearly defined and established by the statutory requirements of the FQPA and the discretionary authority provided to EPA under SDWA, and thus does not plan to further define and identify the universe of chemicals for screening and testing. However, the foundation of Agency strategic planning and budgeting efforts starts with OCSPP taking its statutory and discretionary authorities and translating them into a universe of potential endocrine-disrupting chemicals that, based on potential health risks, need to be screened and tested. OCSPP's response would continue to avoid the creation of such a universe. We continue to believe that the Agency needs to be transparent regarding how it will use all of its authorities to create a universe of chemicals to be screened. As noted in the report, without a better-defined universe, the Agency cannot estimate the amount of resources it will take to effectively sort and prioritize potential endocrine disruptors for screening, or when screening and testing will be completed. OCSPP's response did not meet the intent of the recommendation. We consider this recommendation unresolved.

Note 2 - Response to Recommendation 2:

We agree with the Agency that developing a methodology for objectively prioritizing the universe of chemicals for screening is important. The Agency's response stated that the EDSP's new workplan and EDSP's new comprehensive management plan will be the vehicles that OCSPP uses to address this recommendation. OCSPP stated that it would identify milestones for the release of an initial prioritized chemical list and provide opportunities for external scientific input and public involvement. However, in its response, OCSPP did not specifically commit to considering effects and exposure data, or to taking public nominations, and it only committed to releasing an initial prioritized list.

As such, the Agency has not provided us with sufficient information to determine whether its plans meet the intent of the recommendation. We continue to believe the program should develop a methodology for prioritizing chemicals so that likely endocrine-disrupting chemicals are tested first and stakeholders understand which chemicals have been prioritized for screening. We consider this recommendation unresolved.

Note 3 - Response to Recommendation 3:

We commend the Agency for developing draft Tier 1 criteria for public comment during the course of our evaluation, and for agreeing to develop Tier 2 Standard Evaluation Procedures. However, the Agency still needs to publish specific criteria to be used to evaluate the results of EDSP Tier 2 tests and Hazard Assessment. The Agency has agreed to develop Standard Evaluation Procedures for the Tier 2 tests. We need more information in order to determine whether the Agency's plans for developing Standard Evaluation Procedures would meet the intent of our recommendation. We consider this recommendation unresolved.

Note 4 - Response to Recommendation 4:

The Agency agreed to develop a set of performance measures that comprehensively addresses EDSP activities across all offices, including more outcome measures by June 2012. In its response, the Agency discusses the new performance measures for FY 2011. The Agency is correct in characterizing the first two new performance measures as output measures. However, the Agency will need to better explain its characterization of the third performance measure as an outcome measure. Generally, outputs are actions, activities, and impacts that are internal within an organization (decisions, work products, services provided, etc.), while outcomes have an impact outside of the organization. We accept the Agency's response to this recommendation.

Note 5 - Response to Recommendation 5:

EPA plans to develop a comprehensive management plan for the EDSP that will cover at least 5 years into the future by June 2012. The Agency also noted that its workplan for integrating computational toxicology tools into the EDSP will be a key, initial component of the comprehensive management plan. We accept the Agency's response to this recommendation.

Note 6 - Response to Recommendation 6:

In its response, OCSPP only agreed to continue its current Annual Performance Review, which reports progress toward annual targets. OCSPP stated that it would consider additional options for annual program reviews as the comprehensive management plan was developed, but does not commit to a more extensive review of program progress than has been done in the past. We believe OCSPP's leadership needs to ensure that proper management controls are in place so that progress and accountability can be determined.

Existing reviews have not improved the program's ability to meet milestones, and Congress has stated that EPA was taking too long to implement EDSP. Thus we believe a more enhanced or extensive annual review is warranted. We consider this recommendation unresolved.

Appendix C

Distribution

Office of the Administrator
Assistant Administrator for Chemical Safety and Pollution Prevention
Agency Followup Official (the CFO)
Agency Followup Coordinator
General Counsel
Associate Administrator for Congressional and Intergovernmental Relations
Associate Administrator for External Affairs and Environmental Education
Audit Followup Coordinator, Office of Chemical Safety and Pollution Prevention