

The EPA Needs to Determine Whether Seresto Pet Collars Pose an Unreasonable Risk to Pet Health

February 29, 2024 | Report No. 24-E-0023



Report Contributors

Gabby Fekete	Gaida Mahgoub
Gila Goldstein	Barry Parker
Steve Hanna	Alli Phillips
Lauretta Joseph	Michael Wilson
Jim Kohler	

Abbreviations

C.F.R.	Code of Federal Regulations
EPA	U.S. Environmental Protection Agency
FDA	U.S. Food and Drug Administration
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
IDS	Incident Data System
OIG	Office of Inspector General
OPP	Office of Pesticide Programs
U.S.C.	United States Code
VICH	Veterinary International Conference on Harmonization

Key Definitions

Companion Animal Safety Study:	A report intended to demonstrate an adequate margin of safety if a pesticide product is overused.
Environment:	The water, air, land, and all plants and man and other animals living therein and their interrelationships.
Pesticide Incident:	Any exposure or effect from a pesticide's use that is not expected or intended.
Registration Review:	A review that FIFRA section 3(g)(1)(A) requires the EPA to conduct for every pesticide no later than 15 years after the pesticide's initial registration.
Unreasonable Adverse Effects to the Environment:	Any unreasonable risk to humans or the environment, taking into account the economic, social, and environmental costs and benefits of the use of any pesticide.

Cover Image

A picture of pets. (EPA image)

Are you aware of fraud, waste, or abuse in an EPA program?

EPA Inspector General Hotline
1200 Pennsylvania Avenue, NW (2431T)
Washington, D.C. 20460
(888) 546-8740
(202) 566-2599 (fax)
OIG.Hotline@epa.gov

Learn more about our [OIG Hotline](#).

EPA Office of Inspector General
1200 Pennsylvania Avenue, NW (2410T)
Washington, D.C. 20460
(202) 566-2391
www.epaoig.gov

Subscribe to our [Email Updates](#).
Follow us on X (formerly Twitter) [@EPAoig](#).
Send us your [Project Suggestions](#).



At a Glance

The EPA Needs to Determine Whether Seresto Pet Collars Pose an Unreasonable Risk to Pet Health

Why We Did This Evaluation

To accomplish this objective:

The U.S. Environmental Protection Agency Office of Inspector General conducted this evaluation to determine whether the (1) EPA's response to reported pesticide incidents involving Seresto pet collars provides assurance that the collars can still be used without posing unreasonable adverse effects to human health and the environment and (2) EPA adhered to pesticide registration requirements in its approval of Seresto pet collars, specifically toxicological data requirements in 40 C.F.R. part 158. This evaluation is the result of multiple OIG Hotline complaints.

As of August 2023, the EPA was reviewing the active ingredients, flumethrin and imidacloprid, in Seresto pet collars, pursuant to Federal Insecticide, Fungicide, and Rodenticide Act requirements. The Act mandates that the EPA determine whether a pesticide "will not generally cause unreasonable adverse effects on the environment."

To support this EPA mission-related effort:

- *Ensuring the safety of chemicals.*

To address this top EPA management challenge:

- *Safeguarding the use and disposal of chemicals.*

Address inquiries to our public affairs office at (202) 566-2391 or OIG.PublicAffairs@epa.gov.

[List of OIG reports.](#)

What We Found

The EPA's response to reported pesticide incidents involving Seresto pet collars has not provided assurance that they can be used without posing unreasonable adverse effects to the environment, including pets. While the EPA's Office of Pesticide Programs adhered to the toxicological data requirements in 40 C.F.R. part 158 in its initial approval of Seresto pet collars, it has not adhered to the pesticide registration review process for the active ingredients flumethrin and imidacloprid in the Seresto pet collars. The Office of Pesticide Programs did not conduct or publish domestic animal risk assessments, which it had committed to doing in the work plans for these two pesticides; continues to use an inadequate 1998 companion animal safety study (Guideline 870.7200); and lacks standard operating procedures and a measurable standard to help determine when domestic animal pesticide products pose unreasonable adverse effects to the environment, as required by the Federal Insecticide, Fungicide, and Rodenticide Act.

Additionally, the EPA's Pesticide Incident Reporting System and reporting process do not capture adequate data that the EPA needs to assess unreasonable adverse effects of pet products. The EPA requested that current and former Seresto pet collar registrants provide more than the required aggregate reporting of pet incident data because of the Agency's concerns about the numerous reports of adverse incidents it had received. In July 2023, the EPA reported that it completed a review of Seresto pet collar-related incident reports and said that, in many of the death-related incidents, critical details were missing, preventing the Agency from determining the cause of the deaths. The EPA worked with the current Seresto product registrant to take measures, and the EPA limited its approval of Seresto pet collar registrations to five years. While the EPA will continue to evaluate Seresto incidents over that period, the Office of Pesticide Programs needs to prioritize several areas for improvement to ensure that pesticide products do not pose unreasonable adverse effects to pets.

Pet collars containing pesticides continue to be used without assurance that there are no unreasonable adverse effects on the environment, including pets.

Recommendations and Planned Agency Corrective Actions

We make eight recommendations to assist the EPA in determining whether Seresto pet collars can be used without posing unreasonable adverse effects in pets. The EPA generally agreed with Recommendations 2, 3, 5, 6, 7, and 8, which are resolved with corrective actions pending. Recommendation 4 is also resolved with corrective actions completed. The EPA did not agree with Recommendation 1, which remains unresolved.



OFFICE OF INSPECTOR GENERAL
U.S. ENVIRONMENTAL PROTECTION AGENCY

February 29, 2024

MEMORANDUM

SUBJECT: The EPA Needs to Determine Whether Seresto Pet Collars Pose an Unreasonable Risk to Pet Health
Report No. 24-E-0023

FROM: Sean W. O'Donnell *Sean W O'Donnell*

TO: Michal Ilana Freedhoff, Assistant Administrator
Office of Chemical Safety and Pollution Prevention

This is our report on the subject evaluation conducted by the U.S. Environmental Protection Agency Office of Inspector General. The project number for this evaluation was [OSRE-FY22-0120](#). This report contains findings that describe the problems the OIG has identified and corrective actions the OIG recommends. Final determinations on matters in this report will be made by EPA managers in accordance with established audit resolution procedures.

The Office of Chemical Safety and Pollution Prevention is responsible for the issues discussed in this report.

In accordance with EPA Manual 2750, your office completed corrective actions for Recommendation 4. Your office also provided acceptable corrective actions and estimated milestone dates for Recommendations 2, 3, 5, 6, 7, and 8. These recommendations are resolved with corrective actions pending. A final response pertaining to these recommendations is not required; however, if you submit a response, it will be posted on the OIG's website, along with our memorandum commenting on your response.

ACTION REQUIRED

Recommendation 1 is unresolved. EPA Manual 2750 requires that recommendations be resolved promptly. Therefore, we request that the EPA provide us within 60 days its responses concerning specific actions in process or alternative corrective actions proposed on the recommendation. Your response will be posted on the OIG's 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 to be released to the public; if your response contains such data, you should identify the data for redaction or removal along with corresponding justification.

We will post this report to our website at www.epaoig.gov.

Table of Contents

Purpose	1
Background	1
Seresto Pet Collars, Pet Deaths, and Human Incidents	1
Initial Registrations and Pesticide Registration Review Process	3
Responsible Offices	5
Scope and Methodology	6
Prior Report	7
Results	7
The OPP Did Not Conduct Domestic Animal Risk Assessments as Part of Registration Review or Expressly Determine Whether the Seresto Pet Collar Poses an Unreasonable Risk to Pet Health	8
Data Used for Initial Pesticide Registration Are Not up to International Standards.....	10
IDS Data Are Inadequate to Determine Unreasonable Adverse Effects	11
Additional Concerns Raised over the EPA’s Oversight of Pet Products	13
Recommendations	14
Agency Response and OIG Assessment	14
Status of Recommendations	16

Appendixes

A Agency Response	17
B Distribution	26

Purpose

The U.S. Environmental Protection Agency Office of Inspector General [initiated](#) this evaluation to determine whether the (1) EPA’s response to reported pesticide incidents involving Seresto pet collars provides assurance that the collars can still be used without posing unreasonable adverse effects to human health and the environment and (2) EPA adhered to pesticide registration requirements in its approval of Seresto pet collars, specifically toxicological data requirements in 40 C.F.R. part 158. This evaluation responds to multiple hotline complaints that we received.

Top Management Challenge Addressed

This evaluation addresses the following top management challenge for the Agency, as identified in [OIG Report No. 24-N-0008](#), *The EPA’s Fiscal Year 2024 Top Management Challenges*, issued November 15, 2023:

- Safeguarding the use and disposal of chemicals.

Background

Seresto Pet Collars, Pet Deaths, and Human Incidents

Seresto pet collars are intended for use on dogs that are at least seven weeks old and cats that are at least ten weeks old. The pet collars work by releasing two active ingredients: the pesticides flumethrin and imidacloprid. Pesticides are used on animals to control fleas, ticks, mosquitoes, and other pests.

Federal law generally requires that pesticides distributed and sold in the United States be registered by the EPA. Imidacloprid was originally registered by the EPA in the 1990s. The Seresto pet collar and flumethrin were registered by the EPA in March 2012.¹ Nine years later, in March 2021, news media reported that over 1,500 pets had died and many more had fallen ill while using Seresto pet collars. Furthermore, from 2012 through 2022, the EPA received more than 100,000 incident reports related to Seresto pet collars. By November 2022, the EPA had received more than 2,500 pet death incident reports and nearly 900 human pesticide incident reports regarding Seresto pet collars.

As a result of the March 2021 media coverage, the U.S. House of Representatives Committee on Oversight and Government Reform, which is now the Committee on Oversight and Accountability, Subcommittee on Economic and Consumer Policy launched an investigation. The subcommittee reviewed EPA emails and documents regarding the dangers posed by the Seresto pet collars. In 2022, the subcommittee released a report of its investigation, which outlined the EPA’s awareness of these incidents and the potential harm caused by the collars and the EPA’s own conclusion after an independent review conducted in 2016 that the collars “probably or possibly” caused 45 percent of the reported pet deaths. On July 13, 2023, the EPA reported that it completed a review of Seresto pet

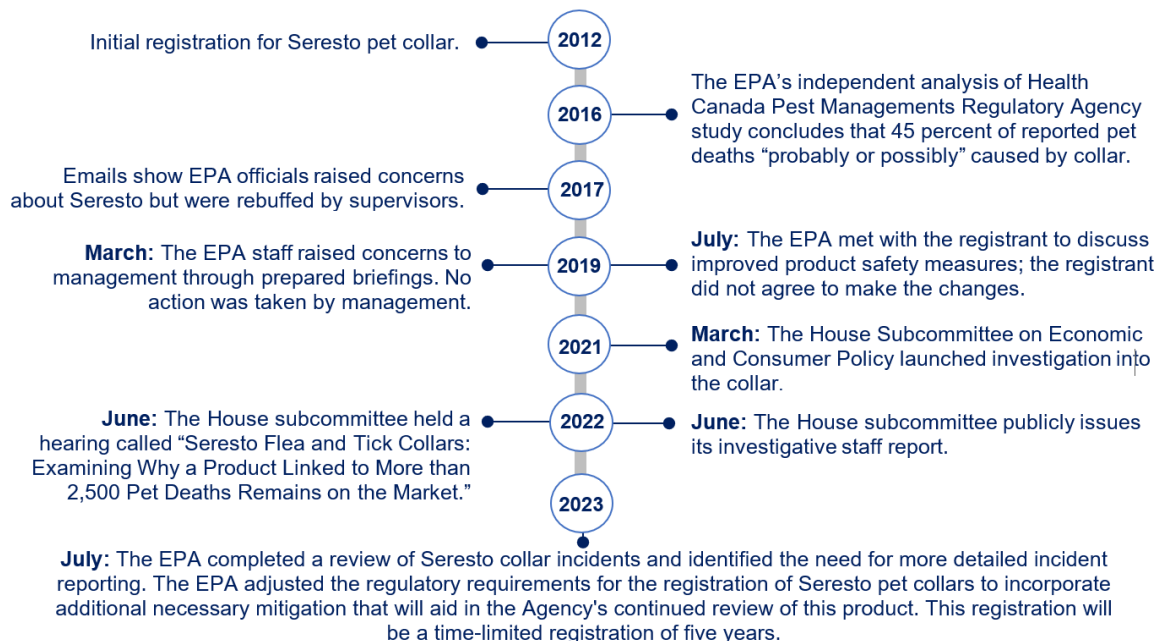
¹ The EPA is responsible for ensuring that all pesticides, including flea and tick products, sold in the United States do not cause unreasonable adverse effects when they are used according to label directions.

collar-related incident reports and announced that it was requiring the implementation of additional measures for Seresto pet collars. According to the Agency’s website, the EPA determined that Seresto pet collars continue to meet the EPA’s standards under FIFRA.² The EPA limited this registration approval to five years.³ The EPA made its determination after completing its review of Seresto pet collar incidents and identifying the need for more detailed incident reporting and public outreach. The EPA’s review found that many of the 1,400 Seresto pet collar incident deaths reported to the EPA from 2016 through 2020 lacked critical details, preventing the Agency from determining the causes of the deaths. Additionally, in some incidents with moderate or severe clinical signs, removal of the collar seemed to alleviate symptoms or reapplication of the collar coincided with a reoccurrence of symptoms. Based on these findings, the registrant of Seresto pet collars agreed to implement new mitigation measures including:

- Adding label warnings on common adverse effects that have been reported, along with instructions to remove the collar if those effects occur and on how to report the incident.
- Requiring the registrant to report incident and sales data on an annual basis and provide additional information about incidents whenever possible.
- Improving the quality of data reported when receiving reported incidents from consumers.

Figure 1 provides a timeline of events related to the Seresto pet collars.

Figure 1: Seresto pet collar timeline



Source: OIG analysis of EPA information. (EPA OIG image)

² U.S. EPA, [EPA Requires Additional Mitigation Measures for Seresto Pet Collars](#) (July 13, 2023).

³ This is different from the normal FIFRA registration review time frame, which is 15 years for an unconditional registration of a pesticide.

What is a pesticide incident?

The EPA defines a **pesticide incident** as any exposure or effect from a pesticide's use that is not expected or intended. Pesticide incidents may involve humans, wildlife, plants, domestic animals, and bees.

Initial Registrations and Pesticide Registration Review Process

Under FIFRA, as amended, 7 U.S.C. §§ 136—136y, the EPA must generally register pesticides that are distributed or sold in the United States. Section 3(c)(5) of FIFRA establishes the statutory standard under which the EPA may unconditionally register a pesticide. The toxicological data required to register a pesticide product under FIFRA are identified in 40 C.F.R. part 158. When the EPA has determined that no “unreasonable adverse effects on the environment” will result from the sale or distribution of a pesticide product, it grants the applicant a license, or **registration**, to legally sell and distribute the product in the United States. After the initial registration is issued, pursuant to section 6(a)(2) of FIFRA, registrants must continue to report any adverse incident data regarding the pesticide to the EPA. Pursuant to section 3(g) of FIFRA, the EPA reviews each registered pesticide at least every 15 years to ensure that each pesticide can carry out its intended functions without creating unreasonable adverse effects on the environment. This requirement is referred to as the **pesticide registration review process**. The EPA's Office of Pesticide Programs, or OPP, within the Office of Chemical Safety and Pollution Prevention, oversees the initial registration process and the pesticide registration review process.

Initial Registration Process

To issue an initial registration for a pesticide, the EPA reviews the chemical, toxicological, and efficacy data that FIFRA requires the applicant to submit with the application. The EPA uses these data to conduct a **risk assessment** to evaluate the pesticide's potential to harm humans, wildlife, fish, and plants and to contaminate surface water or groundwater through leaching, runoff, and spray drift. The EPA also, as part of the initial registration process, evaluates and approves the pesticide's label to ensure that appropriate directions for use and safety measures are listed. The pesticide label is meant to provide clear directions for the effective use of the product while minimizing the risks to human health and the environment. To use a pesticide in a manner inconsistent with its labeling is a violation of federal law.

For any pesticide whose “use will result in exposure to domestic animals through, but not limited to, direct application,” which we subsequently refer to as a **pet product** in this report, the applicant must develop and submit, as part of the toxicological data required pursuant to 40 C.F.R. part 158, a companion animal safety study. The purpose of the companion animal safety study is to demonstrate an adequate margin of safety if a pet product is misused. To guide the development of companion animal safety studies, the EPA issued Guideline 870.7200, *Companion Animal Safety*, in August 1998. The data from the companion animal safety study feed into the **domestic animal risk assessments** that the OPP conducts to quantify any risks to pet health. Data from the companion animal safety study also inform how the pet products should be labeled.

Reporting Requirements After the Initial Registration

After the EPA issues an initial registration for a pesticide, section 6(a)(2) of FIFRA requires the registrant to continue to report to the EPA any information regarding unreasonable adverse effects on the environment. Pesticide incident reports help provide the EPA with robust information on effects and consequences, ensuring that the registered pesticide can continue to be used without posing unreasonable adverse effects.

In 1996, pursuant to section 6(a)(2), the EPA established a rule for registrants to report information regarding unreasonable adverse effects of pesticides after their initial registrations. Among other reporting requirements, the rule mandates that registrants report aggregate data on a quarterly basis for domestic animal pesticide incidents. To house the data submitted in response to this rule, the OPP created an internal system called the Incident Data System, or IDS. The OPP includes information in the IDS about each incident for which there is a claim of either an adverse effect involving humans, plants, or wild and domestic animals or detection of pesticides in water. The IDS records the number of incidents reported for the quarter and the severity of the incidents, such as minor symptoms (minimally bothersome), moderate (more pronounced, more prolonged, or a more systemic nature than minor symptoms), or major (life threatening or resulting in residual disability). While the registrants determine and submit the classification of the incident to the EPA, the OPP manually inputs the incident data it receives into the IDS, and there is no consistent method for the EPA's collection of the data.

The OPP reports that it takes a two-pronged approach to incident data:

- Fully use all available incident information possible, recognizing the strengths, weaknesses, and limitations associated with each data source.
- Work to improve incident information used for decision-making.

Pesticide Registration Review Process

In addition to assessing reported incident data, the EPA is to review each registered pesticide no later than 15 years after its initial registration, pursuant to section 3(g)(1)(A) of FIFRA. The purpose of this review is to determine whether the pesticide continues to perform its intended functions without unreasonable adverse effects on the environment. FIFRA provides the EPA with broad authority to establish or modify data needs and timing for individual pesticide registration actions to achieve statutory and program objectives.

When conducting the pesticide registration review, the EPA is to assess a wide variety of potential human health and environmental effects associated with the use of the pesticide. The EPA may also require additional data to conduct a new risk assessment.

The EPA is to initiate a registration review by establishing a public docket for a pesticide registration review case and opening the docket for public comment. A **docket** is a collection of documents and other materials that an agency makes available for public comment and that are used in a rulemaking or other

agency action. The docket for a pesticide registration review includes a **preliminary work plan** that summarizes the information the EPA has on the pesticide and the anticipated path forward. The EPA publishes a notice in the Federal Register announcing the availability of the docket and providing the public with a comment period of at least 60 days. The EPA then considers the information received during the comment period to develop a **final work plan**. If the EPA determines that it needs more information from the registrant, it issues a data call in notice. Next, the EPA publishes another Federal Register notice announcing its proposed decision or proposed interim decision, and it provides the public with another comment period of at least 60 days. After considering any comments on its proposed decision, the EPA issues an interim or final registration review decision, including an explanation of any changes made since the proposed decision and a response to any significant comments received during the public comment period. Figure 2 summarizes the registration review process.

Figure 2: Registration review process



Source: EPA information. (EPA image)

*After publication, the EPA generally holds a 60-day public comment period.

EPA Authority to Cancel Pesticide Registrations

The EPA is responsible for assessing any changes that have occurred since the last registration decision to determine whether the pesticide still satisfies the statutory standard for registration, and the EPA considers any new information on the pesticide to decide whether a new risk assessment is needed. If, based on information provided by the registrant after an initial registration or obtained as part of the EPA's pesticide registration review process, the EPA determines that the pesticide does pose unreasonable adverse effects, the EPA can take action to protect human health and the environment, including pets. Under section 6(b) of FIFRA, the EPA may cancel a pesticide registration when existing risks related to its use are unacceptable and registrants have not made changes to the registration to address the unacceptable risks.

Responsible Offices

The U.S. Food and Drug Administration, or FDA, regulates animal drugs, feeds and foods, and devices, as well as most animal health products. The FDA regulates orally administered pet pesticide products as drugs, while the EPA regulates products topically applied to the skin, such as flea and tick collars, as pesticides.

The OPP regulates the sale, distribution, and use of all pesticides in the United States. The OPP's Health Effects Division is responsible for assessing pesticide exposure and risks to humans. The EPA's annual appropriated budget for fiscal year 2022 was \$9.56 billion. The Office of Chemical Safety and Pollution Prevention's fiscal year 2022 budget was \$254.4 million, or roughly 2.7 percent of the EPA's total budget. The fiscal year 2022 budget for the OPP was \$83.1 million, or about 0.87 percent of the EPA's

total budget. According to the OPP, since fiscal year 2005 when the office had around 808 full-time employees, it has declined in staff from year to year and had 575 full-time employees by the end of fiscal year 2022.

Scope and Methodology

We conducted this evaluation from May 2022 to September 2023 in accordance with the *Quality Standards for Inspection and Evaluation* published in December 2020 by the Council of the Inspectors General on Integrity and Efficiency. Those standards require that we perform the evaluation to obtain sufficient and appropriate evidence to support our findings.

We reviewed the EPA’s pesticide registration process and data requirements; pesticide incident reporting process; and relevant statutory and regulatory requirements. We also reviewed the June 2022 [staff report](#) findings of a 16-month investigation into the safety of the Seresto flea and tick collars by the House of Representatives Committee on Oversight and Reform Subcommittee on Economic and Consumer Policy.⁴ We interviewed OPP senior leadership to determine roles and responsibilities for pet product regulation and to understand historical management decisions related to Seresto collars. We reviewed OPP documents and information, including the EPA’s website and relevant documents on the additional mitigation measures it is requiring for Seresto pet collars published in July 2023, and the joint FDA and EPA [white paper](#) titled *A Modern Approach to EPA and FDA Product Oversight*, published in February 2023. Throughout this report we use the phrase “adverse effects” as it relates to FIFRA in a variety of ways. This is consistent with the EPA’s use in describing FIFRA’s applicability in determining whether a pesticide can cause unreasonable adverse effects on the environment. FIFRA defines the phrase “unreasonable adverse effects on the environment” to mean, in part, “any unreasonable risk to man or the environment.”⁵ The phrase is used in a variety of ways throughout FIFRA and in EPA materials discussing FIFRA. Examples of how the EPA and FIFRA use this phrase include:

- “Will not generally cause unreasonable adverse effects on the environment.”⁶
- “Any unreasonable risk to man or the environment.”⁷
- “Unreasonable adverse effects on human health or the environment.”⁸
- “Unreasonable adverse effects to human health or the environment.”⁹

⁴ House of Representatives Committee on Oversight and Reform Subcommittee on Economic and Consumer Policy, *Seresto Flea and Tick Collars: Examining Why a Product Linked to More Than 2,500 Pet Deaths Remains on the Market*, June 2022.

⁵ 7 U.S.C. § 136(bb).

⁶ 7 U.S.C. § 136a(c)(5)(D). See also EPA [website](#), *Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and Federal Facilities, Basics of FIFRA*, last updated on March 7, 2023.

⁷ 7 U.S.C. § 136(bb). See also EPA [website](#), *Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and Federal Facilities, Basics of FIFRA*, last updated on March 7, 2023.

⁸ EPA [website](#), *Pesticide Registration Manual: Introduction*, last updated February 6, 2023.

⁹ EPA [website](#), *Pesticide Registration Manual: Introduction*, last updated February 6, 2023.

- “EPA is responsible for ensuring that all pesticides, including flea and tick products, sold in the United States do not cause unreasonable adverse effects.”¹⁰
- “EPA must determine that the pesticide presents no unreasonable adverse effects to humans and the environment.”¹¹

Prior Report

Although not specific to pet incidents, the OIG previously reported on deaths related to pesticide exposure and the IDS in EPA OIG Report No. [17-P-0053](#), *Additional Measures Can Be Taken to Prevent Deaths and Serious Injuries From Residential Fumigations*, issued December 12, 2016. This report found that the “EPA lacks a consolidated incident database that allows the OPP to conduct oversight of incidents, analyze incident trends, and make necessary recommendations to address identified issues.” Below we provide details on this continuing deficiency of pesticide incident reporting.

Results

The EPA’s response to reported pesticide incidents involving Seresto pet collars has not provided assurance that the collars can still be used without posing unreasonable adverse effects to the environment, including to pets. The OPP adhered to the toxicological data requirements in 40 C.F.R. § 158 for the initial registration of the Seresto pet collar, including conducting the required human health risk assessment. Also, pursuant to section 3(g)(1)(A) of FIFRA, the OPP initiated the pesticide registration review process for flumethrin and imidacloprid.¹² However, the OPP did not adhere to some aspects of the pesticide registration review process. Specifically, the OPP did not conduct domestic animal risk assessments for either flumethrin or imidacloprid as it had committed to do in initial and final work plans for both pesticides. Furthermore, according to a long-tenured EPA scientist we interviewed, the EPA’s 1998 Guideline 870.7200 for companion animal safety studies is inadequate, and the OPP lacks standard operating procedures and a methodology to help determine when pet products may pose unreasonable adverse effects to the environment.

Pursuant to section 6(a)(2) of FIFRA, the EPA has collected and input incident data regarding the Seresto pet collar into the IDS. However, the EPA’s IDS does not capture all the data that the Agency needs to assess unreasonable adverse effects of pet products. According to the EPA’s website on pet collar products, the EPA requested additional information from the current and former registrants of the Seresto pet collar on unreasonable adverse effects. Also, the EPA’s lack of action in response to reported incident data does not provide assurance to the public that the Seresto pet collars do not pose unreasonable adverse effects to the environment, including pets. The OPP needs to prioritize several areas for improvement to ensure that pet products do not pose unreasonable adverse effects to pets.

¹⁰ EPA [website](#), *EPA’s Regulation of Flea and Tick Products*, last updated on July 13, 2023.

¹¹ EPA [website](#), *Introduction to Pesticide Incidents*, last updated on July 27, 2023.

¹² According to 40 C.F.R. section 155.42(a), “A registration review case will be composed of one or more active ingredients and all the products containing such ingredient(s).”

The OPP Did Not Conduct Domestic Animal Risk Assessments as Part of Registration Review or Expressly Determine Whether the Seresto Pet Collar Poses an Unreasonable Risk to Pet Health

The OPP adhered to the toxicological data requirements in 40 C.F.R. part 158 for the initial registration of the Seresto pet collar. The OPP has not, however, adhered to the pesticide registration review process for flumethrin and imidacloprid. Specifically, the OPP has not determined whether flumethrin and imidacloprid pose an unreasonable risk to pet health and did not conduct the domestic animal risk assessment that it had committed to do in initial and final work plans for both pesticides.

The EPA's pesticide registration review regulations at 40 C.F.R. § 155.58(b)(1) require the Agency in the proposed registration review decision to state its proposed findings with respect to the FIFRA standard and the basis for the findings. Further, when the OPP makes its registration review decision, the OPP is obligated under 40 C.F.R. § 155.58(a) to provide the public with an explanation of how it came to its decision through a notice in the Federal Register.

The preliminary work plan that the EPA included in the registration review dockets for both flumethrin and imidacloprid specified that the Agency would conduct domestic animal risk assessments. The final work plan for both pesticides also included language reiterating the need for or the Agency's commitment to conducting domestic animal risk assessments.¹³ Pursuant to 40 C.F.R. § 155.53(b)(1), if, as part of a pesticide's registration review, the Agency finds that a new assessment of a pesticide is needed, it will conduct the new risk assessment, either based upon existing data or information or after gathering additional data or information. Therefore, once the Agency concluded that a domestic animal risk assessment was necessary for each pesticide, it was obligated to conduct those assessments. Nevertheless, neither registration review docket included the risk assessments for public comment. Similarly, neither pesticide's proposed interim decision included any domestic animal risk assessment results for public comment. Instead, the OPP issued its:

- *Flumethrin Proposed Interim Registration Review Decision Case Number 7456* in September 2019 for public comment without determining whether pet products containing flumethrin pose a risk to pet health. After it reviewed the public comments, the OPP issued its *Flumethrin Interim Registration Review Decision Case Number 7456* in March 2020 without determining whether pet products containing flumethrin pose a risk to pet health.

¹³ In the flumethrin preliminary and final works plans, the Agency indicated that it planned to conduct a risk assessment regarding "domestic animals" as part of the flumethrin registration review. In the imidacloprid preliminary work plan, the Agency indicated that a "companion animal risk assessment, including an analysis of pet incidents, will be part of the registration review of imidacloprid," whereas in the final work plan it indicated that such a risk assessment "will be required to support registration review." For purposes of this report, we use the phrase "domestic animal risk assessment" to refer to both "domestic animal" and "companion animal" risk assessments.

- *Imidacloprid Proposed Interim Registration Review Decision Case Number 7605* in January 2020 for public comment without providing any domestic animals risk assessment results.¹⁴

The OPP's directors and scientists with whom we spoke stated that the OPP does not have the expertise and resources to conduct domestic animal risk assessments to support the registration review process. The OPP also does not have a standard operating procedure detailing how to conduct domestic animal risk assessments, even though the U.S. Government Accountability Office's [GAO-14-704G](#), *Standards for Internal Control in the Federal Government*, referred to as the Green Book and issued in September 2014, instructs federal managers to design and implement appropriate procedures to fulfill their program's responsibilities.

Moreover, the EPA has no measurable standards in place regarding domestic animal risk assessments. This means that, even if the EPA had conducted the domestic animal risk assessments as part of the flumethrin and imidacloprid registration review process, there is no standard, objective way for the Agency to determine whether the pesticides pose an unreasonable risk to pet health. We identified examples of measurable standards that other agencies use for their domestic animal risk assessments and that the EPA uses for its human health risk assessments:

- **Disproportionality analysis:** According to an FDA division director, the FDA uses a disproportionality analysis to evaluate its adverse incident reporting on approved drugs. This analysis uses a large database of products and incidents to identify when a product may have a higher-than-expected frequency of incidents.
- **Establishment of an adverse incident rate:** The Canada Pest Management Regulatory Agency disapproved the registration of the Seresto pet collar because it has an adverse incident rate greater than one in 10,000 collars sold.
- **Human health risk assessment approach:** The OPP uses four steps to conduct human health risk assessments: (1) hazard identification, (2) dose-response assessment, (3) exposure assessment, and (4) risk characterization.

The OPP is not limited to the above examples and could develop any scientific technique that establishes a measurable standard for when the risk to pet health is unreasonable. Such a standard would align with the Government Accountability Office's instruction to federal managers to implement program objectives designed to meet the requirements of applicable laws and regulations whose performance can be measured and assessed.

¹⁴ We note that the OPP, in its response to the draft report in Appendix A, states, "On July 13, 2023, OPP released a comprehensive scientific review of Seresto pet collars, 'Canine and Feline Adverse Event Review for the Seresto Collar (EPA Reg No. 11556-155),' that is equivalent to the OIG-identified need for a 'domestic animal risk assessment for Seresto products.'" (Footnote omitted.)

Data Used for Initial Pesticide Registration Are Not up to International Standards

The OPP Needs to Update Its Guideline for Companion Animal Safety Studies

The OPP evaluates pet products using data that are not up to international standards. In July 2008, the Veterinary International Conference on Harmonization, or VICH, adopted updated guidelines for margin of safety studies, which were captured in VICH GL43, *Target Animal Safety for Veterinary Pharmaceutical Products*. The FDA implemented the updated margin of safety guidelines in April 2009. The EPA has not done the same. Therefore, while the EPA's 1998 Guideline 870.7200 is the relevant protocol for pesticide registrants to follow when conducting companion animal safety studies, as specified in 40 C.F.R. part 158, that EPA guideline is outdated. For example, although Guideline 870.7200 states that the EPA's intent is to harmonize efforts between the EPA and the FDA, as of March 2023, the OPP has not updated the 1998 guideline to align with the 2008 VICH GL43. Staff we interviewed indicated that this was not a priority and noted that the EPA is not a member of VICH.

A long-tenured EPA scientist told us that the EPA's 1998 Guideline 870.7200 does not allow for accurate measurements of a margin of safety for rates of release from pet collars. This EPA scientist also told us that Guideline 870.7200 was based on FDA protocols from the late 1990s. The scientist described this as a "glaring weakness" that has become publicly obvious with the Seresto pet collar incidents. More efficient, advanced, and accurate methods for ensuring a margin of safety have been developed.

The EPA is aware of the need to incorporate the latest science into its domestic animal risk assessments. On February 17, 2023, the EPA and the FDA jointly issued a white paper on how best to update their respective oversight responsibilities in alignment with each agency's expertise. The white paper notes that "[s]cientific advances in products administered topically to animals have highlighted the need for robust animal safety evaluation and consistent regulatory standards for these products."

Section 3(c)(2)(A) of FIFRA directs the EPA to "publish guidelines specifying the kinds of information which will be required to support the registration of a pesticide and shall revise such guidelines from time to time." The purpose of a companion animal safety study is to demonstrate an adequate margin of safety if the product is misused. The OPP conducted its companion animal safety study for the initial registration of the Seresto pet collar based on data collected via an outdated protocol. Additionally, the OPP's managers indicated that there were no plans as of March 2023 to update the EPA's 1998 Guideline 870.7200 or to revise the required data requirements for pet products.

The OPP Does Not Require the Premarket Clinical Testing of Pet Products

The OPP does not have a pet product data requirement compelling the registrant to conduct and submit premarket clinical testing data. The FDA established this process in its May 2001 *VICH-GL9 Good Clinical Practice*. Clinical testing, which provides data on health impacts, is an integral way to find out whether a new pesticide is safe and effective. Clinical testing to assess hazards to humans and domestic animals may be derived from a variety of tests. The FDA requires pet product manufacturers to conduct and submit premarket clinical testing, including a premarket clinical trial of approximately 200 animals. The

OPP has not developed or issued a registration data requirement for any premarket clinical testing to assess the risk to pets for a pet product's initial registration. The data that the OPP uses to evaluate the risk to pet health posed by a pet product are therefore not as robust as those used by the FDA or as required by international standards. As a result, the OPP's decision to issue an initial registration for a new pet product may not be adequately informed, which puts the health and well-being of pets exposed to the product at risk of unreasonable adverse effects.

IDS Data Are Inadequate to Determine Unreasonable Adverse Effects

The OPP does not capture adequate data to allow the EPA to determine when unreasonable adverse effects are occurring or when further analysis of incidents associated with a domestic animal product is needed. While the IDS captures data on pet incidents received pursuant to FIFRA section 6(a)(2), it does not capture information about the species affected or any narrative information regarding exposure scenarios or symptoms.

For Seresto pet collar incidents, the EPA directed registrants to provide more than the required aggregate reporting of pet incident data maintained in the IDS. In April 2021, the EPA sent letters to the current and former registrants of the Seresto pet collar because of concerns about the numerous reports of adverse incidents that the Agency had received. The letters reiterated the registrants' legal duty under FIFRA to provide information regarding unreasonable adverse effects, including adverse reactions and deaths, for the registered pet products. In addition, the EPA required the registrants to submit sales data. The EPA provided registrants with a detailed, categorized list of information to report. In one category, the EPA specified that "[a]ll available sales data and detailed/enhanced incident data for Seresto collars" should be reported. The EPA also requested that registrants provide the incident information in electronic format using the EPA's reporting template.

EPA staff raised additional concerns to us about incident reporting and noted:

- The IDS is unreliable. The regulations regarding IDS reporting do not adequately define data needs. There is underreporting, and data quality is suspect.
- A standard system and methodology for pet incident process evaluation do not exist, and the Agency should have these to more efficiently review and analyze pet incidents.
- The OPP does not have any guidance or standard operating procedures to evaluate and interpret pet incident data to incorporate into risk assessments.

Pesticide incident reporting is a long-standing problem for the EPA. Table 1 notes deficiencies identified in various sources over a period of 16 years.

Table 1: Examples of deficiencies in the pesticide incident reporting process

Year	Source	Noted deficiencies
2007	The EPA, <i>OPP Report on Incident Information: The Baseline</i> , 2007	<p>“While IDS reports are broad in scope, the system does not consistently capture detailed information about incident events, such as occupational exposure circumstances or medical outcome.”</p> <p>“In most cases data going into IDS is not validated or verified, though some reports are collected from calls to contract poison control centers.”</p>
2016	EPA OIG Report 17-P-0053 , <i>Additional Measures Can Be Taken to Prevent Deaths and Serious Injuries From Residential Fumigations</i> , December 12, 2016	“The EPA lacks a consolidated incident database that allows the OPP to conduct oversight of incidents, analyze incident trends, and make necessary recommendations to address identified issues.”
2018	EPA OIG Report 18-P-0080 , <i>EPA Needs to Evaluate the Impact of the Revised Agricultural Worker Protection Standard on Pesticide Exposure Incidents</i> , February 15, 2018	“[I]ncidents must be manually entered into the IDS, the IDS maintains inconsistent information of different levels of quality and verifiability, and incidents are submitted from various sources. The IDS is also stand-alone and unable to communicate with other databases.”
2020	Internal EPA Briefing, <i>Proposed Seresto - Flumethrin + Imidacloprid Mitigation</i>	Submitted FIFRA section 6(a)(2), “Data Shortcoming”: “Details of the incident are not provided, making identifying any mitigation difficult.”
2021	Internal EPA Briefing, <i>Seresto and EPA’s Regulation of Pet Products</i>	<p>The OPP’s IDS: Pet Incident Data Challenges/Limitations:</p> <ul style="list-style-type: none"> • “Aggregate reporting of pet incidents lacks narrative information on individual incidents • Pet information, including species, sex, health status • Nature of Exposure • Clinical Signs”
2022	Congressional subcommittee report, <i>Seresto Flea and Tick Collars: Examining Why a Product Linked to More than 2,500 Pet Deaths Remains on the Market</i> , House Committee on Oversight and Reform, Subcommittee on Economic and Consumer Policy, June 2022	“EPA must improve its data collection to better understand the risks posed by the pet products it regulates.”

Source: OIG review of relevant documents. (EPA OIG table)

The June 2022 congressional subcommittee staff [report](#) details a 16-month investigation into the safety of Seresto pet collars, which found that the EPA knew the pesticide incident reporting process had enduring deficiencies. The report also restated deficiencies from the EPA’s own 2007 report, *OPP Report on Incident Information: The Baseline* (2007). The subcommittee’s staff report stated:

Despite acknowledging these key flaws over a decade ago, the agency’s reporting system has not been updated since 1997. The incident data that EPA received on the Seresto collar exemplifies the structural shortcomings of the agency’s reporting system.

The EPA's continued lack of action to address long-standing deficiencies in incident reporting prevents the Agency from effectively assessing whether pet products cause unreasonable adverse effects or further incident analysis is needed to make a determination of unreasonable adverse effects.

Additional Concerns Raised over the EPA's Oversight of Pet Products

While the OPP has a clear organizational structure for reviewing human health and ecological data, it is unclear where the responsibility for reviewing domestic animal health and safety data resides. The OPP lacks accountability for conducting domestic animal risk assessments and analyzing incident data, limiting the EPA's ability to ensure that pet products do not pose unreasonable adverse effects to pets. Office of Management and Budget Circular No. A-123, *Management's Responsibility for Enterprise Risk Management and Internal Control*, requires federal managers to implement the Government Accountability Office's Green Book, including establishing an organizational structure, assigning responsibility, and delegating authority to achieve the entity's objectives.

Interviews with Agency scientists identified a lack of oversight and undefined responsibilities for evaluating domestic animal health and safety for pet products. Interviewees expressed the following concerns:

- There is no designated office for the oversight of pet safety and pet health. The OPP's Registration Division has some responsibility when it comes to reviewing companion animal safety studies. For a nonpet product pesticide, the OPP's Health Effects Division would complete the risk assessment, but that risk assessment would focus on human health exposure, not pet exposure.
- The OPP has an Environmental Fate and Effects Division and a Health Effects Division but has no division dedicated to pets. The Environmental Fate and Effects Division is responsible for ecological risk assessments, not domestic animal risk assessments.
- The OPP does not have any guidance or standard operating procedures to evaluate and interpret pet incident data to incorporate into risk assessments.
- According to an OPP senior manager, within the OPP, there is a lack of veterinary expertise and ability to evaluate and interpret the data requirements for pet safety.
- An OPP senior staff member observed that the EPA does not have an advocate for pet health.

One director described to us the need for more program resources and said, "[T]hey lost 30 [full-time equivalent staff] and without additional funding, are projected to lose an additional 30." Another director echoed these concerns about declining resources and said that attrition has outpaced the OPP's ability to hire.

Recommendations

We recommend that the assistant administrator for Chemical Safety and Pollution Prevention:

1. Issue amended proposed interim registration review decisions for both flumethrin and imidacloprid that include domestic animal risk assessments for the two pesticides, written determinations on whether the Seresto pet collar poses unreasonable adverse effects in pets, and an explanation of how the Office of Pesticide Programs came to its determinations. Allow for public comment by placing these documents in the applicable registration review docket.
2. Implement standard operating procedures on how to conduct domestic animal risk assessments for the active ingredients in pet products to support pesticide registration review decisions.
3. Implement a measurable standard to determine when a pet product poses unreasonable adverse effects in pets to support the pesticide registration review decision.
4. Update the EPA's Guideline 870.7200, *Companion Animal Safety*, as necessary, to be consistent with the Veterinary International Conference on Harmonization Guideline GL43, *Target Animal Safety for Veterinary Pharmaceutical Products*.
5. Establish and implement an additional data requirement for the premarket clinical testing of pet products that is consistent with the Veterinary International Conference on Harmonization Guideline GL9, *Good Clinical Practice*.
6. Assess what incident information is needed from registrants of pet products to determine when the EPA should take mitigation measures or other actions. Require pet product registrants to report that information to the EPA.
7. Establish policies and procedures that result in consistent implementation of mitigation measures to address unreasonable adverse effects or conduct additional analysis to determine whether a pet product is causing unreasonable adverse effects.
8. Update the EPA's Incident Data System to capture the additional data that the EPA identifies from the recommendations above to allow the EPA to adequately assess incident reports and make timely decisions on when to take action.

Agency Response and OIG Assessment

Appendix A includes the Office of Chemical Safety and Pollution Prevention's response to our draft report. The office also provided technical comments, which we reviewed and used to make appropriate changes for the final report. The Office of Chemical Safety and Pollution Prevention generally agreed with Recommendations 2, 3, 5, 6, 7, and 8 and provided corrective actions with estimated completion dates. We consider these recommendations resolved with corrective actions pending.

We note that, with respect to Recommendation 5 the EPA, in its response to our draft report, discussed its view that regulatory jurisdiction over pet collars and other topical pet products should be transferred from the EPA to the FDA and detailed steps it has taken to effect such a transfer. The EPA notes that it agrees that premarket testing could be useful, and that the FDA considers the premarket clinical testing in their guidance for new animal drugs. Given the EPA's agreement with the need for premarket testing and the potential transfer of some responsibilities to the FDA, we consider the Agency's proposal to include steps in the Standard Operating Procedure mentioned in Recommendation 2 to perform literature searches for pre-market clinical trials to meet the intent of Recommendation 5

Recommendation 4, regarding the need to update the EPA's companion animal safety guidelines, as necessary, to be consistent with international standards, was an issue identified in our interviews with staff of the Office of Chemical Safety and Pollution Prevention. In its response, the Office of Chemical Safety and Pollution Prevention stated that it reviewed both the VICH's and the EPA's guidelines after receiving our draft report. It concluded that it would not be appropriate to update the EPA's guidelines because "the scope of GL43 applies to all veterinary drugs administered by all routes, not just the topical or dermal routes as is the case with the companion animal products that EPA registers." It considered the recommendation to be "sufficiently addressed" without further corrective actions. Since the EPA conducted the additional review and determined that a change was not needed, we consider Recommendation 4 completed as of the date of the Office of Chemical Safety and Pollution Prevention's response to the draft report.

The Office of Chemical Safety and Pollution Prevention did not agree with Recommendation 1, which advised issuing amended proposed interim registration review decisions. It instead described alternative actions, which the Agency previously outlined in its July 13, 2023 memorandum determining that Seresto pet collars continue to meet the EPA's standards under FIFRA. However, these alternative actions do not meet the intent of Recommendation 1. The Agency's response to the draft report states, "As this was not a registration review action, OPP did not follow the procedural steps of the registration review process nor did it place the documents in the registration review docket or make them available for public comment." The Agency further stated, "Overall, OPP determined that, with the mitigation measures, the use of these collars would meet EPA's standards of no unreasonable adverse effects under FIFRA." However, the Agency did not provide a detailed rationale for this statement, nor did it provide any support for the allowance of an equivalent alternative to a registration review under FIFRA. In the July 2023 memorandum, the Office of Chemical Safety and Pollution Prevention made no express conclusions as to whether Seresto pet collars posed unreasonable adverse effects, and the office did not include opportunities for public comment, which is inconsistent with the Agency's and the OPP's public involvement practices. The importance of public involvement and the EPA's commitment to transparency in its interactions with the public were recently highlighted by the EPA in the October 2023 *Meaningful Involvement Policy*, the EPA *Scientific Integrity Policy*, the OPP's "Pesticide Program Public Involvement Opportunities" [webpage](#), and the "Opportunities to Participate in Pesticide Reevaluation" [webpage](#). Recommendation 1 remains unresolved.

Status of Recommendations

Rec. No.	Page No.	Recommendation	Status*	Action Official	Planned Completion Date
1	14	Issue amended proposed interim registration review decisions for both flumethrin and imidacloprid that include domestic animal risk assessments for the two pesticides, written determinations on whether the Seresto pet collar poses unreasonable adverse effects in pets, and an explanation of how the Office of Pesticide Programs came to its determinations. Allow for public comment by placing these documents in the applicable registration review dockets.	U	Assistant Administrator for Chemical Safety and Pollution Prevention	
2	14	Implement standard operating procedures on how to conduct domestic animal risk assessments for the active ingredients in pet products to support pesticide registration review decisions.	R	Assistant Administrator for Chemical Safety and Pollution Prevention	12/12/25
3	14	Implement a measurable standard to determine when a pet product poses unreasonable adverse effects in pets to support the pesticide registration review decision.	R	Assistant Administrator for Chemical Safety and Pollution Prevention	12/12/25
4	14	Update the EPA's Guideline 870.7200, <i>Companion Animal Safety</i> , as necessary, to be consistent with the Veterinary International Conference on Harmonization Guideline GL43, <i>Target Animal Safety for Veterinary Pharmaceutical Products</i> .	C	Assistant Administrator for Chemical Safety and Pollution Prevention	11/27/23
5	14	Establish and implement an additional data requirement for the premarket clinical testing of pet products that is consistent with the Veterinary International Conference on Harmonization Guideline GL9, <i>Good Clinical Practice</i> .	R	Assistant Administrator for Chemical Safety and Pollution Prevention	12/12/25
6	14	Assess what incident information is needed from registrants of pet products to determine when the EPA should take mitigation measures or other actions. Require pet product registrants to report that information to the EPA.	R	Assistant Administrator for Chemical Safety and Pollution Prevention	12/12/25
7	14	Establish policies and procedures that result in consistent implementation of mitigation measures to address unreasonable adverse effects or conduct additional analysis to determine whether a pet product is causing unreasonable adverse effects.	R	Assistant Administrator for Chemical Safety and Pollution Prevention	12/12/25
8	14	Update the EPA's Incident Data System to capture the additional data that the EPA identifies from the recommendations above to allow the EPA to adequately assess incident reports and make timely decisions on when to take action.	R	Assistant Administrator for Chemical Safety and Pollution Prevention	6/28/24

* C = Corrective action completed.

R = Recommendation resolved with corrective action pending.

U = Recommendation unresolved with resolution efforts in progress.

Agency Response



OFFICE OF CHEMICAL SAFETY AND POLLUTION PREVENTION
WASHINGTON, D.C. 20460

MEMORANDUM

SUBJECT: Response to Draft Report entitled “The EPA Needs to Determine Whether Seresto Pet Collars Pose a Risk to Pet Health,” Project No. OSRE-FY22-0120.

FROM: Michal Freedhoff, Ph.D. **MICHAL FREEDHOFF**
Assistant Administrator

TO: Sean W. O’Donnell
Inspector General

Digitally signed by MICHAL FREEDHOFF
Date: 2023.11.27 17:20:45 -05'00'

This memorandum responds to the U.S. Environmental Protection Agency (EPA) Office of Inspector General’s (OIG) September 27, 2023, Draft Report entitled “The EPA Needs to Determine Whether Seresto Pet Collars Pose a Risk to Pet Health.”

I. General Comments:

The Office of Chemical Safety and Pollution Prevention (OCSPP) appreciates the OIG’s effort in evaluating whether:

- EPA’s response to reported pesticide incidents involving Seresto pet collars provides assurance that the collars can still be used without posing unreasonable adverse effects to human health and the environment, and
- EPA adhered to pesticide registration requirements in its approval of Seresto pet collars, specifically toxicological data requirements in 40 C.F.R. part 158.

OCSPP partially agrees with OIG’s conclusions and recommendations. However, the Draft Report identifies several recommendations that the OCSPP is unable to implement without significant changes in expertise, resources, time, funding, and regulations. In addition, the Draft Report did not appear to consider the results of the extensive multi-year re-evaluation of Seresto products that EPA released in July 2023 nor the Food and Drug Administration (FDA)-EPA jurisdictional whitepaper released in

February 2023, as these documents were not included in the Scope and Methodology section of the report, which lists the materials the OIG evaluated.

OCSPP remains committed to improving protections for pet health and is already implementing changes to its regulatory processes based on the robust review of Seresto. OCSPP agrees with the OIG that the Office of Pesticide Programs (OPP) adhered to the toxicological data requirements in its initial approval of Seresto, that a Standard Operating Procedure (SOP) can be developed to better assess pet health risks going forward, and that the Incident Data System (IDS) currently lacks detailed information on pet incidents. OCSPP does not agree with the Draft Report's conclusions that OPP did not determine whether Seresto pet collars can be used without posing unreasonable adverse effects to pets and did not do a domestic animal risk assessment for Seresto.

Over the past several years, OPP has been improving its method for considering pet product-incidents, such as those reported for Seresto collars, in the pesticide registration and re-evaluation process. Due to the number of Seresto-related incidents reported to OPP, in April 2021 EPA sent a letter¹ pursuant to section 6(a)(2) of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and 40 CFR Part 159 to the registrant of Seresto pet collars, reiterating its statutory requirement to report incidents associated with the products and to provide additional data on reported adverse effects of Seresto pet collars. This additional information was more extensive than what is routinely reported by pesticide product registrants to EPA's Incident Data System (IDS). OPP completed its extensive review of over 120 documents in July 2023, which included adverse event reports from 2016-2020, toxicology and pharmacokinetic studies, and assessments conducted by the registrant. OCSPP has also been engaged in a multi-year collaboration between EPA and FDA which resulted in the creation of the February 2023 whitepaper titled "A Modern Approach to EPA and FDA Product Oversight." The whitepaper outlines challenges with OPP's current approach to pet product regulation and recommends improvements to the process, which include a transfer of jurisdiction for some pet products to FDA.

OCSPP's Technical Comments, which we respectfully request remain internal to EPA, were provided to the OIG on 10/27/23. OCSPP appreciates the OIG staff's willingness to meet with OCSPP staff to discuss this Draft Report in multiple meetings. OCSPP continues its commitment to work to improve its process for evaluating pet health. What follows are discussions of OPP's Seresto scientific review, regulatory actions, long-term pet product oversight plans, and specific responses to the OIG's recommendations in the Draft Report.

OPP's Scientific Review of Seresto

On July 13, 2023, OPP released a comprehensive scientific review of Seresto pet collars, "Canine and Feline Adverse Event Review for the Seresto Collar (EPA Reg No. 11556-155),"² that is equivalent to the OIG-identified need for a "domestic animal risk assessment" for Seresto products. In this report, and with the help of FDA scientists, OPP reviewed the companion animal studies submitted in support of the collar registration, the toxicological data set on the two active ingredients (imidacloprid and flumethrin), available data on the rate that the active ingredients are released from the collar, and the reported adverse event data. During this extensive 2-year effort, EPA consulted with FDA's Center for Veterinary

¹ Information Concerning Seresto Collars That Must Be Reported Pursuant to FIFRA Section 6(a)(2); <https://www.regulations.gov/document/EPA-HQ-OPP-2021-0625-0002>

² Canine and Feline Adverse Event Review for the Seresto Collar (EPA Reg No. 11556-155); <https://www.regulations.gov/document/EPA-HQ-OPP-2021-0625-0015>

Medicine (FDA CVM, hereafter referred to as FDA) on this review and incorporated methodologies often utilized in FDA’s adverse event reviews.

OPP’s scientific review of Seresto-related incident reports identified the need for more detailed incident reporting in order to inform future regulatory efforts and public outreach. EPA analyzed all incidents that reported deaths related to the use of Seresto. This included 1,400 deaths reported to EPA from 2016-2020, which represent 2% of all Seresto incidents reported for these years. In many of the death-related incidents, critical details of the incident were often missing, preventing the Agency from determining the cause of the death. The only reported deaths that were found to be “probably” or “definitely” related to Seresto product use were associated with mechanical strangulation or trauma caused by the collar, often associated with a failure of the release mechanism. For all other deaths, EPA did not identify cases with a probable or definite association between collar use and death, often due to other factors impacting the pet, such as an existing medical condition. In addition, the rate of deaths reported for Seresto was similar to that for other pet products reviewed. EPA also analyzed all significant non-lethal incidents, such as neurological symptoms. In some incidents with moderate or severe clinical signs, removal of the collar seemed to alleviate symptoms and/or reapplication of the collar coincided with a reoccurrence of symptoms. Additional details can be found in OPP’s scientific review.³

OPP’s Seresto Regulatory Actions

On July 13, 2023, OPP also released “EPA’s Memorandum in Support of the Regulatory Decision for PNR 1427 (Seresto Pet Collar, EPA Reg. No. 11556-155)”⁴, which includes a summary of OPP’s scientific review⁵ and the benefits of Seresto compared to similar alternative products to control fleas and ticks.⁶ The regulatory rationale also includes a section titled “Rationale for Final Regulatory Decision and Risk Mitigation,” describing how OPP determined that the Seresto collars meet the FIFRA approval standard based on additional mitigation the registrant has agreed to implement.

Based on the considerations in the documents listed above, the Agency adjusted the regulatory requirements for Seresto pet collars and incorporated additional risk mitigation measures on the product label in July 2023. The registrant is now required to submit enhanced data for all incidents going forward, including specific reported clinical signs, detailed pet information (e.g., species, age, breed, medical conditions, etc.), and detailed case narratives. Additionally, material that was considered deficient in the science review—including critical details on death incidents, adequate case follow up on any reported deaths, and information on a pet’s health status prior to collar application—is now also required in the incident reporting to improve OPP’s incident evaluations. The Seresto registrant is also required to provide detailed sales data, data on annual incident rates and severity, and any incidents in other countries where the collars are sold. To alert veterinarians and consumers of potential risks, the terms of continued registration require the registrant to include label warnings on Seresto products that describe common adverse effects that have been reported, along with instructions to remove the collar

³ Canine and Feline Adverse Event Review for the Seresto Collar (EPA Reg No. 11556-155);

<https://www.regulations.gov/document/EPA-HQ-OPP-2021-0625-0015>

⁴ EPA’s Memorandum in Support of the Regulatory Decision for PNR 1427 (Seresto Pet Collar, EPA Reg. No. 11556-155); <https://www.regulations.gov/document/EPA-HQ-OPP-2021-0625-0013>

⁵ Canine and Feline Adverse Event Review for the Seresto Collar (EPA Reg No. 11556-155);

<https://www.regulations.gov/document/EPA-HQ-OPP-2021-0625-0015>

⁶ Usage, Benefits, and Impacts of Potential Mitigation for Seresto Pet Protection Collars Containing Imidacloprid (PC Code 129909) and Flumethrin (PC Code 036007); <https://www.regulations.gov/document/EPA-HQ-OPP-2021-0625-0004>

if those effects occur and instructions on how to report the incident. The registrant also must develop an outreach program to communicate more effectively with veterinarians and the public on the risks of using the product and other similar pesticides on pets. To reduce the risk of strangulation, the registrant must evaluate potential changes to the emergency release mechanism of Seresto collars to prevent death by strangulation or choking. The Seresto registration was split into two registrations, one for cats and one for dogs, to help with future incident comparisons across products. The Seresto registration was also time-limited to 5 years so the newly enhanced incident data can be monitored during this period and so EPA can decide whether to continue the registration or to modify/cancel it after 5 years.

Overall, OPP determined that, with the mitigation measures, the use of these collars would meet EPA's standards of no unreasonable adverse effects under FIFRA. Specifically, the Seresto Cat registration notice (EPA Registration # 11556-191) states, "This product is unconditionally registered in accordance with FIFRA section 3(c)(5)" and the Seresto Dog label amendment letter (EPA Registration # 11556-155) states, "The application referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended, is acceptable under FIFRA Section 3(c)(5) subject to the following conditions..." both dated July 13, 2023.^{7,8}

Long Term Solutions to Pet Product Oversight

In addition, OPP would like to acknowledge the multi-year collaboration between EPA and FDA to create the February 2023 whitepaper titled "A Modern Approach to EPA and FDA Product Oversight."⁹ While the Draft Report includes one quote from this document, indicating that scientific advances have highlighted the need for more robust animal safety evaluation and consistent regulatory standards for topical pet products, the Draft Report does not discuss one of the main points of the whitepaper concerning challenges with EPA's current approach to pet product regulation. These challenges include: misalignment of each agency's expertise with the products it regulates, differences in the agencies' resources and infrastructure to assess animal safety and product incidents, advancement in scientific understanding on how products work, and a lack of clarity among the public about which agency has jurisdiction over which products.

Additionally, the February 2023 whitepaper discusses a modernized approach for better regulation of these products, specifically the transfer from EPA to FDA of approximately 600 topically administered products for external parasites on animals, including pet collars. This transfer would better align regulation of these products with FDA's expertise and resources on animal products, which far exceed EPA's. OPP manages approximately 18,000 active pesticide registrations, of which only several hundred control external parasites on pets and other animals. OPP only has two veterinarians—neither of whom were hired to work on these types of products full time and have been pulled away from their other duties to help evaluate pet products. By contrast, FDA's CVM has many veterinary medical officers and other staff with expertise to assess these products more comprehensively.

One way to accomplish this transfer could be through legislative changes. This past year, EPA and FDA have jointly met several times with Congressional staff on the House Energy and Commerce, House Agriculture, Senate Health, Education, Labor, and Pensions, Senate Environment and Public Works, and

⁷ Label for Seresto Cat (11556-191); https://www3.epa.gov/pesticides/chem_search/ppls/011556-00191-20230713.pdf

⁸ Label for PNR1427 INSECTICIDE/Seresto Dog (11556-155); https://www3.epa.gov/pesticides/chem_search/ppls/011556-00155-20230713.pdf

⁹ EPA and FDA Modernized Approach to Oversight of Certain Products; <https://www.regulations.gov/docket/EPA-HQ-OPP-2023-0103>

Senate Agriculture Committees. The agencies also provided technical assistance to these Congressional committees at their request. Additionally, the agencies briefed the White House’s Council on Environmental Quality on the proposed transfer. These efforts further highlight EPA and FDA’s approach to finding long-term solutions to regulating pet products.

II. OCSPP’s Response to the Recommendations:

Recommendation 1: Issue amended proposed interim registration review decisions for both flumethrin and imidacloprid that include domestic animal risk assessments for flumethrin and imidacloprid; written determinations on whether the Seresto pet collar poses unreasonable adverse effects in pets; and an explanation of how the Office of Pesticide Programs came to its determinations. Allow for public comment by placing these documents in the applicable registration review dockets.

- **OCSPP Response 1:** OPP’s July 13, 2023 actions satisfy this recommendation.

On July 13, 2023, OPP released a comprehensive scientific review¹⁰ of Seresto pet collars (the only pet product with both imidacloprid and flumethrin), which is equivalent to a “domestic animal risk assessment.” OPP also released “EPA’s Memorandum in Support of the Regulatory Decision for PNR 1427 (Seresto Pet Collar, EPA Reg. No. 11556-155)”¹¹ that includes a section titled “Rationale for Final Regulatory Decision and Risk Mitigation,” which describes how OPP came to its determinations. OPP’s written determination that, with additional risk mitigation measures incorporated, the use of these collars continued to meet EPA’s standards of no unreasonable adverse effects under FIFRA was also publicized on July 13, 2023.¹²

OPP used the registration review process to address risks to pets in the March 2020 Flumethrin Interim Registration Review Decision¹³, but OPP also worked outside of registration review to more quickly obtain from the registrant the additional Seresto product and incident information evaluated in OPP’s scientific review.¹⁴ As this was not a registration review action, OPP did not follow the procedural steps of the registration review process nor did it place the documents in the registration review docket or make them available for public comment. However, OCSPP placed documents supporting the July 2023 regulatory decision in a separate public docket.¹⁵ In addition, in July 2021, OPP requested public comment on a petition from the Center for

¹⁰ Canine and Feline Adverse Event Review for the Seresto Collar (EPA Reg No. 11556-155); <https://www.regulations.gov/document/EPA-HQ-OPP-2021-0625-0015>

¹¹ EPA’s Memorandum in Support of the Regulatory Decision for PNR 1427 (Seresto Pet Collar, EPA Reg. No. 11556-155); <https://www.regulations.gov/document/EPA-HQ-OPP-2021-0625-0013>

¹² See the Seresto Cat registration notice (EPA Registration # 11556-191) stating, “This product is unconditionally registered in accordance with FIFRA section 3(c)(5)” and the Seresto Dog label amendment letter (EPA Registration # 11556-155) stating, “The application referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended, is acceptable under FIFRA Section 3(c)(5) subject to the following conditions...”, both dated July 13, 2023.

¹³ Flumethrin Interim Registration Review Decision; <https://www.regulations.gov/document/EPA-HQ-OPP-2016-0031-0036>

¹⁴ Information Concerning Seresto Collars That Must Be Reported Pursuant to FIFRA section 6(a)(2); <https://www.regulations.gov/document/EPA-HQ-OPP-2021-0625-0002>

¹⁵ Docket EPA-HQ-OPP-2021-0625 at [regulations.gov](https://www.regulations.gov)

Biological Diversity¹⁶ to cancel Seresto collars and suspend the collars pending cancellation. OPP received and reviewed more than 5,400 public comments and, in July 2023, responded by denying the Petitioner's request to cancel and suspend the Seresto registration based on OPP's July 2023 regulatory decision.¹⁷ Finally, EPA contacted our stakeholders, posted updates on EPA's website, and addressed questions from the public after issuing its findings on Seresto on July 13, 2023.

Recommendation 2: Implement standard operating procedures on how to conduct domestic animal risk assessments for the active ingredients in pet products to support pesticide registration review decisions.

- **Proposed Corrective Action 2:** OCSPP agrees to develop standard operating procedures to evaluate risk to pets from the active ingredients in pet products.
- **Target Completion Date:** December 12, 2025.

Recommendation 3: Implement a measurable standard to determine when a pet product poses unreasonable adverse effects in pets to support the pesticide registration review decision.

- **Proposed Corrective Action 3:** OCSPP agrees to establish a methodology to determine when a pet product needs further investigation to ensure the product does not pose unreasonable adverse effects to pets and to include it in the SOP mentioned under Recommendation 2.
- **Target Completion Date:** December 12, 2025.

Recommendation 4: Update the EPA's Guideline 870.7200, Companion Animal Safety, to be consistent with the Veterinary International Conference on Harmonization Guideline GL43, Target Animal Safety for Veterinary Pharmaceutical Products.

- **OCSPP Response 4:** Since receiving the Draft Report, OPP compared EPA's Guideline 870.7200 with the Veterinary International Conference on Harmonization Guideline GL43. EPA's 870.7200 requires more animals (n=6) compared to GL43 (n=4) per group. While GL43 does describe additional laboratory safety study designs, they are not relevant to companion animals. The scope of GL43 applies to all veterinary drugs administered by all routes, not just the topical or dermal routes as is the case with the companion animal products that EPA registers, and GL43 includes not just companion animals but also food-producing animals. OCSPP has determined that it would not be appropriate to update EPA's Guideline 870.7200 to be consistent with GL43. Therefore, OCSPP considers this recommendation to be sufficiently addressed and is accordingly not providing additional corrective actions.

Recommendation 5: Establish and implement an additional data requirement for the premarket clinical testing of pet products that is consistent with the Veterinary International Conference on Harmonization Guideline GL9, Good Clinical Practice.

- **Proposed Corrective Action 5:** OCSPP agrees premarket clinical testing could be useful in evaluating potential risks to pets. FDA considers premarket clinical testing as part of their

¹⁶ Center for Biological Diversity April 2021 Petition to Cancel Seresto Collar; <https://www.regulations.gov/document/EPA-HQ-OPP-2021-0409-0002>

¹⁷ Petition to Cancel Registration of PNR1427 (Brand Name Seresto) under the Federal Insecticide, Fungicide, and Rodenticide Act; Reg. No. 11556-155; <https://www.regulations.gov/document/EPA-HQ-OPP-2021-0409-0287>

substantial evidence of effectiveness guidance for new animal drugs in their Guidance for Industry #85 (VICH GL9). However, as this is not required for any other EPA products, establishing and implementing a new data requirement would require substantial resources, additional expertise, and increased funding. These challenges further support the transfer of veterinary products from EPA to FDA. For example, a resource-intensive rulemaking would be needed to establish a new data requirement, and guideline writing and a Scientific Advisory Panel (SAP) are needed to establish the methods by which to conduct the testing, all of which would likely take more than 5 years. Additionally, as FDA has GL9 in place to evaluate premarket clinical testing, it would be inefficient for EPA to replicate a similar data requirement while EPA and FDA continue to find a long-term solution, as described in their whitepaper, to regulating these products.

Therefore, as a corrective action that can be implemented in a timelier fashion with our current resources, OCSPP will include steps in the SOP mentioned in Recommendation 2 to perform literature searches for pre-market clinical trials, which could include data generated for product registration in other countries.

- **Target Completion Date:** December 12, 2025

Recommendation 6: Assess what incident information is needed from registrants of pet products to determine when the EPA should take mitigation measures or other actions. Require pet product registrants to report that information to the EPA.

- **Proposed Corrective Actions 6a and 6b:** OCSPP agrees with this recommendation. OPP has previously evaluated what additional incident information would be useful to improve OPP's ability to identify and mitigate potential risk concerns to pets. Templates are available for pet product companies to use in reporting the sales and incident data to supplement data collected in IDS.¹⁸ Further, during the extensive review of the Seresto incidents, OPP identified additional incident reporting information that could enhance future incident evaluations. As part of the Seresto 5-year time limited registration established in July 2023, the Seresto registrant must report this enhanced incident information annually. To address other pet products, as Corrective Action 6a, OCSPP will update the website to include additional guidance on collecting incident data that was identified during the Agency's extensive review of the Seresto incidents and is described in the registration conditions for the Seresto collars.^{19,20} As Corrective Action 6b, OCSPP will develop a plan to require pet product registrants to report this incident information to the EPA.
- **Target Completion Date:** For Corrective Action 6a, June 28, 2024. For Corrective Action 6b, December 12, 2025.

¹⁸ Incident and sales data templates; <https://www.epa.gov/pesticides/use-standardized-templates-report-pet-spot-incidents-conclusion-pilot-and-implementation>

¹⁹ Registration condition #5: Label for Seresto Cat (11556-191); https://www3.epa.gov/pesticides/chem_search/ppls/011556-00191-20230713.pdf

²⁰ Registration condition #6: Label for PNR1427 INSECTICIDE/Seresto Dog (11556-155); https://www3.epa.gov/pesticides/chem_search/ppls/011556-00155-20230713.pdf

Recommendation 7: Establish policies and procedures that result in consistent implementation of mitigation measures to address unreasonable adverse effects or conduct additional analysis to determine whether a pet product is causing unreasonable adverse effects.

- **Proposed Corrective Action 7:** OCSPP agrees to establish policies and procedures that result in consistent implementation of mitigation measures, as appropriate, to address unreasonable adverse effects or conduct additional analysis to determine whether a pet product is causing unreasonable adverse effects, and to include this in the SOP mentioned under Recommendation 2.
- **Target Completion Date:** December 12, 2025.

Recommendation 8: Update the EPA's Incident Data System to capture the additional data that the EPA identifies from the recommendations above to allow the EPA to adequately assess incident reports and make timely decisions on when to take action.

- **Proposed Corrective Action 8:** In July 2023, OCSPP took a major step to increase the transparency of IDS by releasing 10 years of pesticide incident data on its website and to continue to make this data available going forward.²¹ The numerous incidents related to Seresto contributed to OCSPP's decision to share these data sets. Sharing this information also advances EPA's commitment to environmental justice and aligns with EPA's Equity Action Plan by expanding the availability of data and capacity so the public and community organizations can better understand pesticide exposures, including exposures to overburdened populations. These data sets allow users to access raw data on pesticide exposure incidents such as the incident date, the reason for the report (e.g., adverse effect, product defect), and the severity of the incident. Most reports also provide information on the location of the incident, the pesticide product, and a brief description of the incident(s). While EPA's IDS is the main repository of incident reports for pesticide products, OPP has developed other methods of obtaining additional information for pets to improve OPP's ability to make timely decisions. These additional data, including incident information and sales data, are captured in OPP's official document repository system, Documentum. As discussed under Proposed Corrective Action 6, OCSPP already has templates for registrants to report any additional information missing from data collected through IDS.²² OCSPP will update the website to include additional guidance on collecting incident data that was identified during the Agency's extensive review of the Seresto incidents, as described above in Proposed Corrective Action 6.
- **Target Completion Date:** June 28, 2024.

cc: All OCSPP DAAs
Edward Messina, Director, OPP
Michael Goodis, Deputy Director of Programs, OPP
Leo Gueriguian, Acting Deputy Director for Management, OPP
Charles Smith, Division Director, OPP/RD
Elissa Reaves, Division Director, OPP/PRD
Timothy Kiely, Deputy Director, OPP/PRD
Daniel Rosenblatt, Deputy Director, OPP/RD

²¹ <https://www.epa.gov/pesticides/epa-posts-pesticide-incident-data-publicly>

²² Incident and sales data templates; <https://www.epa.gov/pesticides/use-standardized-templates-report-pet-spot-incidents-conclusion-pilot-and-implementation>

Jennifer Saunders, Acting Associate Director, OPP/RD
Cathryn Britton, Chief, OPP/PRD/RMIBV
Paul Di Salvo, Acting Chief, OPP/RD/IVB1
Kerry Leifer, Chief, OPP/RD/CITAB
Lauretta Joseph, OIG
Steve Hanna, OIG
Gila Goldstein, OIG
Jim Kohler, OIG
Gaida Mahboub, OIG
Barry Parker, OIG
Alli Phillips, OIG
Michael Wilson, OIG
Janet L. Weiner, OCSPP Senior Audit Liaison
Susan Perkins, OCFO

Distribution

The Administrator
Deputy Administrator
Chief of Staff, Office of the Administrator
Deputy Chief of Staff for Management, Office of the Administrator
Agency Follow-Up Official (the CFO)
Assistant Administrator for Chemical Safety and Pollution Prevention
Agency Follow-Up Coordinator
General Counsel
Associate Administrator for Congressional and Intergovernmental Relations
Associate Administrator for Public Affairs
Director, Office of Continuous Improvement, Office of the Chief Financial Officer
Director, Office of Pesticide Programs, Office of Chemical Safety and Pollution Prevention
Deputy Director for Programs, Office of Pesticide Programs, Office of Chemical Safety and
Pollution Prevention
Deputy Director for Management, Office of Pesticide Programs, Office of Chemical Safety and
Pollution Prevention
Deputy Assistant Administrator for Chemical Safety and Pollution Prevention
Deputy Assistant Administrator for Pesticide Programs, Office of Chemical Safety and
Pollution Prevention
Deputy Assistant Administrator for Management, Office of Chemical Safety and Pollution Prevention
Director, Office of Pollution Prevention and Toxics, Office of Chemical Safety and Pollution Prevention
Deputy Director, Office of Pollution Prevention and Toxics, Office of Chemical Safety and
Pollution Prevention
Office of Policy OIG Liaison
Office of Policy GAO Liaison
Audit Follow-Up Coordinator, Office of the Administrator
Senior Audit Advisor, Office of Chemical Safety and Pollution Prevention
Audit Liaison, Office of Pollution Prevention and Toxics



Whistleblower Protection

U.S. Environmental Protection Agency

The whistleblower protection coordinator's role is to educate Agency employees about prohibitions against retaliation for protected disclosures and the rights and remedies against retaliation. For more information, please visit the [OIG's whistleblower protection webpage](#).

Contact us:



Congressional Inquiries: OIG.CongressionalAffairs@epa.gov



Media Inquiries: OIG.PublicAffairs@epa.gov



EPA OIG Hotline: OIG.Hotline@epa.gov



Web: epaoig.gov

Follow us:



X (formerly Twitter): [@epaoig](https://twitter.com/epaoig)



LinkedIn: [linkedin.com/company/epa-oig](https://www.linkedin.com/company/epa-oig)



YouTube: [youtube.com/epaoig](https://www.youtube.com/epaoig)



Instagram: [@epa.ig.on.ig](https://www.instagram.com/epa.ig.on.ig)



www.epaoig.gov