

US EPA ARCHIVE DOCUMENT

Q&As:
Perfluorochemical (PFC) Contamination in Dalton, GA
Prepared by U.S. Environmental Protection Agency
(EPA)

A. DALTON-SPECIFIC Q&As

Further questions about information contained within this section of the document should be directed to EPA Region 4, Davinna Marraccini – 404-562-8293

1. When did EPA learn about the release of PFCs at the Loopers Bend Wastewater Treatment Plant in Dalton, Georgia?

In July 2009, EPA received information from Dalton Utilities Loopers Bend Wastewater Treatment Plant in Dalton, Georgia that PFCs have been detected in soil, wastewater effluent, groundwater, sewage sludge (biosolids), and compost at its Loopers Bend facility, and in the adjacent Conasauga River.

2. Why and how long has EPA been investigating the PFC issue in Dalton, Georgia?

In 2006, the University of Georgia (UGA) sampled the surface water from the Conasauga River for PFCs both upstream and downstream of the Dalton Utilities Loopers Bend facility. The report, published in 2008, indicated downstream samples had elevated concentrations of two PFCs, perfluorooctanoic acid (PFOA) and perfluorooctyl sulfonate (PFOS), as compared to upstream samples. Concentrations of PFOA ranged from 0.24 (upstream) to 1.15 ppb (downstream) and concentrations of PFOS ranged from 0.19 (upstream) to 0.32 ppb (downstream).

Due to their proximity to the Loopers Bend facility, EPA collected and analyzed drinking water from the public water supply systems of Dalton, Calhoun, Shannon, and Rome, Georgia in March 2009. The public water sample results indicated the levels of PFOA and PFOS in community water systems are below the EPA's drinking water Provisional Health Advisory levels.

In May 2009, EPA sent Dalton Utilities an information request under the Clean Water Act (CWA) Section 308 to investigate the potential for PFC contamination in its Loopers Bend wastewater land application sprayfield and the compost generated by the facility. In response, in June 2009, Dalton Utilities collected and analyzed samples from its sprayfield site including soil, groundwater monitoring wells, and effluent. It also

sampled sewage sludge and compost produced in the wastewater treatment process, and surface water from the Conasauga River and a tributary, Holly Creek.

In July and August 2009, Dalton Utilities submitted its reports to EPA with detailed analyses, methods and results for the water and solids samples collected in response to EPA's May 2009 CWA Section 308 information request.

3. What other information is available on PFC releases in the Dalton, Georgia area?

In response to the elevated PFOA and PFOS levels found in the published 2008 UGA study, UGA partnered with the Georgia Environmental Protection Division (GA EPD) in late 2008 to sample fish and mussel tissue from sites upstream and downstream of Dalton Utilities. Preliminary results from this sampling study indicated elevated levels of PFOS in spotted bass and blue catfish downstream of the Loopers Bend land application site as compared to fish samples taken upstream from the site. GA EPD is currently reviewing the fish tissue sampling results to determine if any follow-up actions are warranted.

4. Did EPA collect samples in Dalton, Georgia?

In January 2009, EPA developed drinking water provisional health advisory levels for two PFCs: PFOA and PFOS. The provisional health advisory level for PFOA is 0.4 parts per billion (ppb) [micrograms per liter] and the provisional advisory level for PFOS is 0.2 ppb.

In March 2009, EPA collected and analyzed drinking water from the public water supply systems of Dalton, Calhoun, Shannon, and Rome, Georgia. The public water sample results indicated the levels of PFOA and PFOS in community water systems are below the EPA's drinking water provisional health advisory levels. In January 2010, EPA collected additional drinking water samples from the public water systems of Dalton and Rome, Georgia. The final analytical report indicated concentrations of PFOA and PFOS in the samples collected from the two drinking water systems were below the EPA's provisional health advisory values.

5. What are the levels of PFCs found at the Loopers Bend Wastewater Treatment plant?

In May 2009, EPA sent Dalton Utilities an information request under the CWA Section 308 to investigate the potential for PFC contamination in its Loopers Bend wastewater land application sprayfield and the compost generated by the facility. In response, in June 2009, Dalton Utilities collected and analyzed samples from its sprayfield site including soil, groundwater monitoring wells, and effluent. It also sampled sewage sludge and compost produced in the wastewater treatment process, and surface water from the Conasauga River and a tributary, Holly Creek.

From July through September 2009, Dalton Utilities also conducted a survey to identify private drinking water wells in the immediate vicinity of the land application area in order to sample the wells for PFCs. Of the 110 private drinking water wells sampled within a 1-mile radius around the Loopers Bend facility, 100 wells had no PFCs above the analytical detection limit, seven wells had detectable levels of PFCs below EPA's provisional health advisory for drinking water, two wells had detectable levels of PFCs other than PFOA and PFOS; and, one well was determined to have concentrations of PFOS slightly above EPA's provisional health advisory level. Dalton Utilities quickly provided bottled water to the residence with elevated PFOS levels, and then connected it to the public drinking water system. Dalton Utilities continues to sample the remaining drinking water wells that had detectable concentrations of PFCs on a quarterly basis. Dalton has notified the residents of their respective private drinking water well sample results.

In July and August 2009, Dalton Utilities submitted its reports to EPA with detailed analyses, methods and results for the water and solids samples collected in response to EPA's May 2009 CWA Section 308 information request. The analytical results from these two reports indicated:

- The compost had PFOA values ranging from 1900 to 4500 ppb, and PFOS values ranging from 210 to 2500 ppb.
- One sample of fresh sewage sludge had a concentration of PFOA of 91 ppb, and PFOS of 210 ppb.
- The wastewater application sprayfield monitoring wells had PFOA values ranging from no detectable level up to 4.4 ppb, and PFOS values ranging from no detectable level up to 5.2 ppb. These wells are not sources of residential drinking water.
- The soil from the wastewater application sprayfield had PFOA values ranging from 5.3 ppb up to 37 ppb, and PFOS values from 37.7 ppb up to 288 ppb.
- The effluent from the sprayheads had PFOA values ranging from 0.5 ppb up to 0.8 ppb, and PFOS values from no detectable levels up to 0.4 ppb.
- The surface water samples taken in the Conasauga River and Holly Creek had PFOA values ranging from no detectable level up to 0.4 ppb and PFOS values ranging from no detectable level up to 0.7 ppb.

On October 6, 2009, EPA sent a second Section 308 information request to Dalton Utilities for the monitoring of the private drinking water wells, characterization of the wastewater, sewage sludge, compost, compost use wastewater application sprayfield, and the Conasauga River and Holly Creek. From October 2009 through August 2010, Dalton Utilities submitted PFC analytical results as requested. In addition, in December 2009, Dalton Utilities voluntarily submitted wildlife data of PFC concentrations in deer and wild turkey serum, muscle and liver. Dalton Utilities also voluntarily completed the Dalton Utilities industrial users PFC wastewater sampling project. The summary of the analytical results from these reports indicated:

- The compost had PFOA values ranging from 590 to 2600 ppb and PFOS values ranging from 89 to 1200 ppb.

- The fresh sewage sludge PFOA and PFOS concentrations remained consistent with the July / August 2009 sampling event. Sample collected in April 2010, the most recent sampling, indicated concentrations of PFOA of 97.2 ppb and PFOS of 219 ppb.
- The wastewater application sprayfield monitoring wells had PFOA values ranging from no-detectable level up to 6.5 ppb and PFOS values ranging from no detectable level up to 14 ppb. Again, these wells are not sources of residential drinking water.
- The surface water samples downstream of Loopers Bend sprayfield site taken in the Conasauga River had PFOA values ranging from 0.14 to 0.358 ppb and PFOS values ranging from 0.33 to 0.665 ppb. Surface water samples at the confluence of the Conasauga River and Holly Creek had PFOA values ranging from no detectable level to 0.31 ppb and PFOS values ranging from no detectable level to 1.2 ppb.
- The muscle tissue sampled from a 0.5-year old female deer and a 3.5-year old male deer taken from the Loopers Bend wastewater sprayfield site had no detectable levels of PFOA, and PFOS values ranging from 12.65 to 90.3 ppb. The serum from these deer had no detectable levels of PFOA, and PFOS values ranging from 113 to 1130 ppb. The liver samples from these deer had no detectable levels of PFOA, and PFOS values ranging from 589 to 2675 ppb.
- The muscle tissue sampled from a 1-year old male wild turkey and 4-year old male wild turkey taken from the Loopers Bend wastewater sprayfield site had no detectable levels of PFOA, and PFOS values ranging from 86.1 to 184.5 ppb. The serum from these turkeys had PFOA values ranging from 18.5 to 33.3 ppb, and PFOS values ranging from 2090 to 2695 ppb. The liver samples from these turkeys had PFOA values ranging from no detectable level to 12.55 ppb and PFOS values ranging from 1570 to 2055 ppb.

Dalton Utilities also submitted analytical results of soil and five nearby drinking water wells of private property owners that received the compost. These locations were chosen based on the amount of compost used and the application of this compost to areas in close proximity to private drinking water wells. The analytical report indicated the following:

- The soil had PFOA values ranging from no detectable levels to 780 ppb and PFOS values ranging from no detectable level to 470 ppb.
- The five private drinking water wells had no detectable level of PFOA or PFOS.

6. What are EPA's action levels for PFCs found at the Loopers Bend Wastewater Treatment plant?

In January 2009, EPA issued national drinking water provisional health advisories for two PFCs, PFOA and PFOS. The provisional health advisory for PFOA is 0.4 ppb [micrograms per liter (ug/L)] and the provisional health advisory for PFOS is 0.2 ppb. In November 2009, EPA released residential soil screening guidance values for PFOA and PFOS that are protective of children who might incidentally ingest soils during play. These soil screening values are 16,000 ppb [micrograms per kilogram (ug/kg)] for PFOA and 6,000 ppb for PFOS. The EPA's advisory levels for residential soils and drinking

water are guidance values only and are not required to be met by federal or state regulations. EPA has not established action levels for PFCs, including PFOA or PFOS, in wastewater effluent, sewage sludge, compost, groundwater or surface water.

After voluntarily ceasing distribution of the compost in July 2009 and prior to resuming distribution in May 2010, Dalton Utilities completed an extensive survey and PFC sampling of private drinking water wells, compost, soil, industrial sources discharging to the Loopers Bend wastewater treatment plant, and surface water. EPA is aware that Dalton Utilities resumed distribution of finished compost from its Loopers Bend wastewater treatment facility in May 2010. PFCs are not regulated under EPA's biosolids program [Clean Water Act (CWA) Section 405 / 40 Code of Federal Regulations (CFR) Part 503] and the distribution of this compost by Dalton Utilities is allowed under the EPA biosolids program.

7. What are the sources of the PFCs found in effluent and compost from the Loopers Bend Wastewater Treatment Plant?

EPA believes that industrial discharges to the Dalton Utilities wastewater treatment plant, primarily from carpet manufacturers, have led to PFC concentrations in wastewater effluent, sewage sludge, composted sewage sludge, sprayfield soils, groundwater, and water samples from the Conasauga River and Holly Creek.

Dalton is known as “The Carpet Capital of the World” and is home to many carpet and flooring manufacturers who may use PFCs, such as PFOA and PFOS, as surface protection and stain guards in their products. (Approximately 90% of the world's carpet is produced in this area.) The majority of the wastewater treated by the Loopers Bend facility is from industrial sources, primarily carpet manufacturers.

PFCs are used in the production of a wide array of consumer products as a processing aid to create non-stick and stain-resistant surfaces and to impart water, stain, and grease resistance to carpets, paper and textile. Therefore, general domestic wastewater is expected to also contribute PFCs to the wastewater treatment plant. The concentration of the PFCs in domestic wastewater is expected to be much less than the concentrations in wastewater from industrial carpet manufacturing.

8. How much wastewater is processed at the Loopers Bend Plant and what is the disposal method for the wastewater and sewage sludge?

After treatment, the 30 million gallons per day (mgd) of wastewater is land applied to a 9800-acre tract of land owned by Dalton Utilities using approximately 19,000 sprayheads. The sewage sludge or solids, also known as biosolids, are mixed with wood chips, composted on-site, and sold in bulk as soil amendment to businesses and individuals in northwest Georgia and southeastern Tennessee.

9. Is Dalton Utilities continuing its distribution of the compost to the general public?

After voluntarily ceasing distribution of the compost in July 2009 and prior to resuming distribution in May 2010, Dalton Utilities completed an extensive survey and PFC sampling of private drinking water wells, compost, soil, industrial sources discharging to the Loopers Bend wastewater treatment plant, and surface water. EPA is aware that Dalton Utilities resumed distribution of finished compost from its Loopers Bend wastewater treatment facility in May 2010. PFCs are not regulated under EPA's biosolids program [Clean Water Act (CWA) Section 405 / 40 Code of Federal Regulations (CFR) Part 503] and the distribution of this compost by Dalton Utilities is allowed under the EPA biosolids program.

Dalton Utilities has informed EPA that it intends to regularly sample its compost and will only distribute compost that is ten times below EPA's residential soil screening guidance values for PFOA and PFOS. In addition, Dalton Utilities has informed EPA that it is requiring recipients of the compost to sign an agreement to use the product for landscaping only, and not for home gardens or farms. Individuals who are concerned about exposure to PFCs may want to avoid using compost from Dalton Utilities

10. Why are EPA / GA EPD allowing Dalton Utilities to continue spraying the effluent on the Loopers Bend land application area?

Based on the available information, the effluent spray irrigation system is in compliance with its GA EPD issued land application permit.

11. What is EPA doing about the levels of PFCs in Dalton, Georgia?

EPA continues to work with the GA EPD, the GA Department of Natural Resources (DNR), and Dalton Utilities to evaluate and respond to potential public health risks associated with PFCs from the Loopers Bend wastewater treatment facility.

Dalton Utilities has committed to providing alternative water to any private individuals with drinking water wells in the vicinity of the site found to have PFOA or PFOS concentrations above EPA's provisional health advisory levels.

EPA will keep the public informed of what we are finding and any actions taken to limit human and environmental exposures.

12. What can residents in the area who rely on private wells for drinking water do to protect themselves from exposure?

Most of the area around the Loopers Bend facility has access to public water, so only a limited number of nearby residents are expected to obtain drinking water from private wells. Dalton Utilities conducted a survey to identify private drinking water wells in the immediate vicinity of the land application system in order to sample the wells for PFCs.

From July through September 2009, Dalton Utilities also conducted a survey to identify private drinking water wells in the immediate vicinity of the land application area in order to sample the wells for PFCs. Of the 110 private drinking water wells sampled within a 1-mile radius around the Loopers Bend facility, 100 wells had no PFCs above the analytical detection limit, seven wells had detectable levels of PFCs below EPA's provisional health advisory for drinking water, two wells had detectable levels of PFCs other than PFOA and PFOS; and, one well was determined to have concentrations of PFOS slightly above EPA's provisional health advisory level. Dalton Utilities quickly provided bottled water to the residence with elevated PFOS levels, and then connected it to the public drinking water system. Dalton Utilities continues to sample the remaining drinking water wells that had detectable concentrations of PFCs on a quarterly basis. Dalton has notified the residents of their respective private drinking water well sample results.

The Dalton Utilities compost contains other PFCs for which EPA has not issued drinking water and residential soil advisory levels. EPA is currently working to establish a threshold value for PFCs, including PFOA and PFOS, in biosolids to protect public health through all exposure pathways, but has not yet completed this ongoing work. Therefore, it is not currently known if the levels of PFOA, PFOS and other PFCs in Dalton Utilities biosolids are protective of public health. In addition, EPA has not established guidance levels for PFCs, including PFOA or PFOS, in wastewater effluent, sewage sludge, compost, groundwater or surface water as it has for drinking water and residential soil. Individuals that are concerned about exposure to PFCs may want to avoid using compost from Dalton Utilities.

If persons are concerned about PFC compounds in their drinking water, some water filtration devices (point-of-use devices that are installed at an individual tap, faucet, or outlets) may remove some of these compounds from water, based on a study conducted by the Minnesota Department of Health. Individuals should contact the company that makes the water filtration device to determine whether the device is effective in removing PFC compounds, and ask for advice on how often they should change their filters.

13. Do residents in the area who rely on community water systems for drinking water need to take further precautions?

No. In late March 2009, EPA collected and analyzed the drinking water from the public water systems for Rome, Dalton, Calhoun and Shannon, Georgia due to their proximity to the Dalton Utilities wastewater treatment plant. In January 2010, EPA collected additional drinking water samples from the public water systems of Dalton and Rome, Georgia. The final analytical report indicated concentrations of PFOA and PFOS in the samples collected from the two drinking water systems were below the EPA's provisional health advisory values.

EPA has established drinking water provisional health advisories for two of the PFCs: PFOA and PFOS. The provisional health advisory levels are 0.4 ppb for PFOA and 0.2 ppb for PFOS.

The public water sample results indicated the levels of PFOA and PFOS in the community water systems are below the EPA's drinking water provisional health advisory levels. Based on these data, EPA believes the public drinking water levels are not of concern and residents may rely on the public water from these systems

14. Will EPA continue to test the public water supplies?

EPA does not plan additional sampling of the public water systems since the March 2009 sampling of the four drinking water systems (Dalton, Calhoun, Shannon, and Rome, Georgia) and the January 2010 sampling of the two drinking water systems (Dalton and Rome, Georgia) indicated the PFOA and PFOS concentrations are below EPA's provisional health advisory levels. The officials at these public water systems were notified of their PFOA and PFOS sampling results and encouraged to monitor periodically for these chemicals. If new information becomes available which indicates potential PFC contamination in the public water systems, then EPA will consider additional sampling of those systems.

15. Should I be concerned about the potential for exposure to PFCs?

Because of the widespread use of PFCs, most people in the U.S. have some concentration of PFCs in their body. Once the PFCs are in a person's body, it takes several years for the level in the body to be reduced by one-half, even if no further exposures to PFCs occur. There is still much to learn about the health effects associated with PFCs. Some studies suggest that lower birth weight, increased cholesterol, and changes in liver function may be associated with PFCs. Yet, other studies have not shown the same associations. Therefore, there is still much debate about how exposures to PFCs may affect humans. Because many factors can contribute to health problems, it is difficult to link a person's health problem directly to any single measurement of PFCs in the blood. Testing of a person's PFC blood concentrations can be used to determine if exposures have occurred; however, these measurements do not tell the timing, magnitude, or duration of exposure. Health-related information on PFCs may be found at the following US Agency for Toxic Substances and Disease Registry website: <http://www.atsdr.cdc.gov/tfacts200.html>

16. Is the compost safe to use?

EPA has not established guidance levels for PFCs, including PFOA or PFOS, in wastewater effluent, sewage sludge, compost, groundwater or surface water as it has for drinking water and residential soil. In addition, the Dalton Utilities compost contains other PFCs for which EPA has not issued drinking water and residential soil advisory levels. EPA is currently working to establish a threshold value for PFCs, including PFOA and PFOS, in biosolids to protect public health through all exposure pathways, but has not yet completed this ongoing work. Therefore, it is not currently known if the levels

of PFOA, PFOS and other PFCs in Dalton Utilities biosolids are protective of public health.

After voluntarily ceasing distribution of the compost in July 2009 and prior to resuming distribution in May 2010, Dalton Utilities completed an extensive survey and PFC sampling of private drinking water wells, compost, soil, industrial sources discharging to the Loopers Bend wastewater treatment plant, and surface water. EPA is aware that Dalton Utilities resumed distribution of finished compost from its Loopers Bend wastewater treatment facility in May 2010. PFCs are not regulated under EPA's biosolids program [Clean Water Act (CWA) Section 405 / 40 Code of Federal Regulations (CFR) Part 503] and the distribution of this compost by Dalton Utilities is allowed under the EPA biosolids program.

Dalton Utilities has informed EPA that it intends to regularly sample its compost and will only distribute compost that is ten times below EPA's residential soil screening guidance values for PFOA and PFOS. In addition, Dalton Utilities has informed EPA that it is requiring recipients of the compost to sign an agreement to use the product for landscaping only, and not for home gardens or farms. Individuals who are concerned about exposure to PFCs may want to avoid using compost from Dalton Utilities

Health-related information on PFCs may be found at the following US Agency for Toxic Substances and Disease Registry website: <http://www.atsdr.cdc.gov/tfacts200.html>

17. Are my home grown vegetables safe to eat? I have eaten vegetables grown in compost from Dalton Utilities. What should I do?

Currently, there is insufficient scientific information to know if vegetables grown in soil amended with compost from the Loopers Ben facility has levels of PFCs and whether these concentrations pose any risk to human health. There is limited information indicating that plants may uptake some PFCs; however, the risk this poses to human health is unknown. EPA is considering future scientific research in this area.

If a person has concerns about the health effects associated with the compost and its uses, he or she may want to consider limiting contact with the compost and reduce or eliminate the eating of vegetables grown in the compost-amended soil. If a person has concerns about exposure to PFCs through vegetables grown in compost, he or she may want to consider speaking with their personal physician.

Additional health related information may be found at the following US Agency for Toxic Substances and Disease Registry website: <http://www.atsdr.cdc.gov/tfacts200.html>

18. Who purchased the Dalton Utilities' compost and where was it applied?

Many business and private individuals purchased the compost between the years of 2003 and 2009. Dalton Utilities has estimated that 80 million pounds of the compost were

distributed during this time period. For approximately one year (2003), Dalton Utilities, through a contractor, Harvest Farms, packaged the compost in bags and sold to local garden shops. After 2003, Harvest Farms ceased bagging the compost and sold large volumes of compost in bulk to other companies. These companies resold the compost for a variety of uses primarily in north Georgia and southern Tennessee such as landscaping and horticultural nurseries. Many private individuals also purchased compost directly from Dalton Utilities (through Harvest Farms) for use as landscaping and home garden soil amendment material.

After voluntarily ceasing distribution of the compost in July 2009 and prior to resuming distribution in May 2010, Dalton Utilities completed an extensive survey and PFC sampling of private drinking water wells, compost, soil, industrial sources discharging to the Loopers Bend wastewater treatment plant, and surface water. EPA is aware that Dalton Utilities resumed distribution of finished compost from its Loopers Bend wastewater treatment facility in May 2010. PFCs are not regulated under EPA's biosolids program [Clean Water Act (CWA) Section 405 / 40 Code of Federal Regulations (CFR) Part 503] and the distribution of this compost by Dalton Utilities is allowed under the EPA biosolids program.

Dalton Utilities has informed EPA that it intends to regularly sample its compost and will only distribute compost that is ten times below EPA's residential soil screening guidance values for PFOA and PFOS. In addition, Dalton Utilities has informed EPA that it is requiring recipients of the compost to sign an agreement to use the product for landscaping only, and not for home gardens or farms. Individuals who are concerned about exposure to PFCs may want to avoid using compost from Dalton Utilities.

19. Are my cattle / poultry / crops / feed safe since I used compost from Dalton Utilities on my farm?

The multiple components of feed potentially exposed to the compost and the subsequent dilution of these products would likely contribute to reducing the potential risk associated with the feed and products derived from animals consuming the feed. However, USDA and FDA at the present time do not have enough information to make a definitive determination associated with these potential risks.

The U.S. Food and Drug Administration (FDA) and U.S. Department of Agriculture (USDA) are best able to answer these questions and can be contacted by e-mail or telephone as follows:

Brian Mabry, USDA – Questions about Food Safety (meat, poultry and certain egg products (not shell eggs))

Brian.Mabry@fsis.usda.gov Phone: (202) 720-9113

Cindy N. Ragin, USDA - Questions about Animal and Plant Health

Cindy.N.Ragin@aphis.usda.gov, Phone: (301) 734-7280.

Mike Herndon, FDA – Questions about Food (all food except meat, poultry and certain egg products (FDA is responsible for shell eggs))

Michael.Herndon@fda.hhs.gov, Phone: (301) 796-4673

Ira Allen, FDA – Questions about Feed

Ira.allen@fda.hhs.gov, Phone: (301)796-5349

20. How do I know if my compost came from Dalton Utilities?

EPA recommends that recipients of compost contact their distributor. The distributor should be able to identify the source of the compost.

21. What should I do if I received compost from Dalton Utilities?

EPA has not established advisory levels for PFCs, including PFOA or PFOS, in compost. However, the Agency is currently evaluating available data to develop these values and will keep the public informed of what we are finding and our actions taken to limit human and environmental exposures.

In the interim, if a person has concerns about the compost and its uses, he or she may want to consider limiting contact with the compost; eating vegetables grown in the compost; and, other activities associated with its use.

22. Is the wildlife from the Loopers Bend facility safe to eat?

In December 2009, Dalton Utilities voluntarily submitted wildlife data of PFC concentrations in deer and wild turkey serum, muscle and liver taken from animals collected at the Loopers Bend WWTP sprayfield. The analytical results from these reports indicated:

- The muscle tissue sampled from a 0.5-year old female deer and a 3.5-year old male deer taken from the Loopers Bend wastewater sprayfield site had no detectable level of PFOA, and PFOS values ranging from 12.65 to 90.3 ppb. The serum from these deer had no detectable level of PFOA, and PFOS values ranging from 113 to 1130 ppb. The liver samples from these deer had no detectable level of PFOA, and PFOS values ranging from 589 to 2675 ppb.
- The muscle tissue sampled from a 1-year old male wild turkey and 4-year old male wild turkey taken from the Loopers Bend wastewater sprayfield site had no detectable level of PFOA, and PFOS values ranging from 86.1 to 184.5 ppb. The serum from these turkeys had PFOA values ranging from 18.5 to 33.3 ppb, and PFOS values ranging from 2090 to 2695 ppb. The liver samples from these turkeys had PFOA values ranging from no detectable level to 12.55 ppb and PFOS values ranging from 1570 to 2055 ppb.

There is not enough scientific information at the present time to know if wildlife from the Loopers Bend facility is safe to eat.

If a person has concerns about exposure to PFCs through the food supply, he or she may want to consider limiting the consumption of game taken from the Loopers Bend facility.

Additional health related information may be found at the following US Agency for Toxic Substances and Disease Registry website: <http://www.atsdr.cdc.gov/tfacts200.html>

23. Is it safe to swim in the Conasauga River?

EPA has not established advisory levels for PFCs, including PFOA or PFOS, in surface water. Currently, there is insufficient scientific information to know if PFCs in the Conasauga River present a threat to human health through exposures during swimming.

In the interim, if a person has concerns about exposure to PFCs in surface water, he or she may want to consider limiting contact with the Conasauga River downstream of the Dalton Utilities Loopers Bend area.

Additional health related information may be found at the following US Agency for Toxic Substances and Disease Registry website: <http://www.atsdr.cdc.gov/tfacts200.html>

B. PFC BACKGROUND

Further questions about information contained within this section of the document should be directed to EPA's Office of Public Affair – Dale Kemery (202-564-7839) or Enesta Jones, (202-564-7873).

1. What are PFCs?

PFCs are synthetic (man-made) chemicals that do not occur naturally in the environment. These compounds are used in a variety of industrial and consumer applications, including use as a processing aid in the manufacture of non-stick and stain-resistant surfaces and products and to impart water, stain, and grease resistance to carpets, paper and textiles. PFOS and PFOA are very persistent in the environment and have been found at very low levels both in the environment and in the blood of the general population of the United States. PFOS is no longer manufactured in the United States. Some PFCs have been determined to be degradable in the environment and to form PFOA, PFOS and related compounds.

2. How long has the Agency been looking into PFCs and their potential risks?

In the late 1990's, EPA received information from industry under the Toxic Substances Control Act (TSCA) Section 8(e) indicating that PFOS was widespread in the blood of

the general population, and presented concerns for persistence, bioaccumulation, and toxicity. Following discussions between EPA and 3M, the manufacturer of PFOS, the company terminated production of these chemicals. Findings on PFOS led EPA to review similar chemicals, including PFOA, to determine whether they might present concerns similar to those associated with PFOS.

3. What are the concerns related to PFOA?

PFOA is very persistent in the environment and has been found at very low levels both in the environment and in the blood of the general population of the United States. Once the PFCs are in a person's body, it takes several years for the level in the body to be reduced by one-half, even if no further exposures to PFCs occur. There is still much to learn about the health effects associated with PFCs. Some studies suggest that lower birth weight, increased cholesterol, and changes in liver function may be associated with PFCs. Yet, other studies have not shown the same associations. All of these factors, taken together, prompted the Agency to investigate whether PFOA might pose a risk to human health and the environment at the levels currently being found, or at levels that might be reached in the future as PFOA continues to be released into the environment.

4. How are people exposed to PFOA?

EPA does not have a full understanding of how people are exposed to PFOA, which is used as a processing aid in the manufacture of fluoropolymers, and may also be a breakdown product of other related chemicals, such as some fluorinated telomers. In April 2003, EPA released a preliminary risk assessment for PFOA and started a public process to identify and generate additional information to better understand the sources of PFOA and the pathways of human exposure. Specifically, EPA is working with industry and other stakeholders to obtain additional environmental monitoring information on PFOA, exposures resulting from incineration or loss from products as they are used over time, and telomer biodegradation as a potential source of PFOA. The Agency has finalized TSCA Section 4 Enforceable Consent Agreements and Memorandums of Understanding (MOUs) for exposure-related studies with industry in a public process involving a large number of interested parties, and is cooperating with industry and other stakeholders on additional voluntary research activities. In addition, EPA is conducting research focused on the health effects and exposures to PFOA and other PFCs. This research is designed to generate enhanced science knowledge and high quality data that will help the Agency address these key uncertainties in pathways of exposure and potential risks from PFOA.

5. What steps has the Agency taken to reduce exposure to PFCs?

In January 2006, EPA invited the eight major companies in the industry to participate in the 2010/15 PFOA Stewardship Program. The companies agreed to participate and in so doing committed to reduce facility emissions and product content of PFOA and related chemicals by 95% by 2010, and to work toward eliminating emissions and product content by 2015. Commitment to the program is in addition to and does not replace

existing commitments to Enforceable Consent Agreements or MOUs. The first progress reports were received in October 2007, and showed significant reductions. For example, three companies reported greater than 98% reductions in emissions of PFOA in the United States, and five companies reported greater than 74% reductions of PFOA outside the United States.

There has also been considerable progress in the development and introduction of substitutes and alternates. For example, in early 2006, Asahi introduced a new line of products that were free of PFOA and PFOA precursors. In 2007, DuPont committed to “eliminate the need to make, buy or use PFOA by 2015.” In late 2007, Daikin announced intentions to “stop manufacturing, using and selling PFOA and eight-carbon or longer chain telomer-based water and oil repellent products by the end of 2012.” In early 2008, 3M announced intentions to introduce a PFOA substitute this year to be used in the manufacture of some of the products currently on the market. To date, companies have submitted more than 100 new chemical alternatives to EPA for review through the Premanufacture Notification (PMN) process. More information on the 2010/15 PFOA Stewardship Program is available at

<http://www.epa.gov/oppt/pfoa/pubs/pfoastewardship.htm>.

In December 2009, EPA released an Action Plan for Long-Chain Perfluorinated Chemicals (LCPFCs), announcing that EPA is considering initiating rulemaking under TSCA Section 6 to manage LCPFCs. TSCA Section 6 provides authority for EPA to ban or restrict the manufacture (including import), processing, and use of these chemicals. PFOA, PFOS, and their precursors, are part of LCPFCs. EPA will develop more detailed assessments to support the TSCA Section 6(a) “presents or will present an unreasonable risk” findings. If these more detailed assessments indicate that a different approach to risk management is appropriate, EPA will consider additional approaches. More information is available at

<http://www.epa.gov/oppt/existingchemicals/pubs/actionplans/pfcs.html>.

6. What are the concerns related to PFOS?

Concerns with PFOS are similar to those with PFOA and include developmental, reproductive, and systemic toxicity. PFOS is highly persistent in the environment and has a strong tendency to bioaccumulate.

7. What recommendations does the Agency have for consumers who use products made with these PFCs?

Consumer products made with PFCs include some non-stick cookware and products such as breathable, all-weather clothing. PFCs are also employed in hundreds of other uses in almost all industry segments, including the aerospace, automotive, building/construction, chemical processing, electrical and electronics, semiconductor, and textile industries. Telomers are used as surfactants and as surface treatment chemicals in many products, including fire-fighting foams; personal care and cleaning products; and oil, stain, grease, and water repellent coatings on carpet, textiles, leather, and paper. These products are

not PFOA; however, PFOA is used as a processing aid. The information that EPA has available does not indicate that the routine use of household products poses a concern. EPA does not have any indication that the public is being exposed to PFOA through the use of Teflon®-coated or other trademarked nonstick cookware. Teflon® and other trademarked products are not PFOA. At the present time, EPA does not believe there is any reason for consumers to stop using any products because of concerns about PFOA.

8. Is there a risk assessment on PFOA?

To ensure that the most rigorous science is used in the Agency's ongoing evaluation of PFOA, the EPA Office of Pollution Prevention and Toxics submitted in 2005 a draft risk assessment for formal peer review by the Agency's Science Advisory Board (SAB). That draft was preliminary and did not provide conclusions regarding potential levels of concern. The SAB reviewed the information that was available at the time, and suggested that the PFOA cancer data are consistent with the EPA guidelines descriptor "likely to be carcinogenic to humans." Since their review, additional research has been conducted pertaining to the carcinogenicity of PFOA. EPA is still in the process of evaluating this information, and has not made any definitive conclusions at this time.

9. What is the status of the Agency's efforts regarding reducing exposure to PFOS?

Following the voluntary phase out of PFOS by the principal worldwide manufacturer, EPA took prompt SNUR regulatory action under the TSCA to limit any future manufacture or importation of 88 perfluoroalkyl sulfonates (PFAS) chemicals specifically included in that phase-out. PFAS is a generic term used to describe any fully fluorinated carbon chain length sulfonic acid, including higher and lower homologues as well as PFOS.

These TSCA SNURs allowed the continuation of a few specifically limited, highly technical uses of these chemicals for which no alternatives were available, and which were characterized by very low volume, low exposure, and low releases. Any other uses of these chemicals would require prior notice to and review by the Agency. Subsequently, EPA identified 183 more PFAS chemicals which it believed were no longer being manufactured, imported or used in the United States, with the possible exception of the same uses excluded from the earlier SNURs. However, based on comments received during the public comment period and related communications, EPA learned of additional limited uses of PFAS chemicals. Consequently, those uses for particular chemicals were excluded from the final SNUR. EPA published a Federal Register notice ([72 FR 57222, October 9, 2007](#)) finalizing the SNUR on these 183 chemicals.

In December 2009, additional actions on PFOS and related PFOS chemicals were proposed in the LCPFCs Action Plan.

10. Where can I find more information about PFOA and PFOS?

Basic information about PFOA is available at the EPA PFOA website:

<http://www.epa.gov/oppt/pfoa/pubs/pfoainfo.htm>.

Additional information about PFOS and other PFCs is also available at:

<http://www.epa.gov/oppt/pfoa/pubs/related.htm>.

Information on PFC contamination of biosolids applied near Decatur, Alabama and other related topics are available at the EPA Region 4 website at:

<http://www.epa.gov/region4/water/PFCindex.html>

C. BIOSOLIDS BACKGROUND

Further questions about information contained within this section of the document should be directed to EPA's Office of Public Affairs – Dale Kemery (202-564-7839) or Enesta Jones, (202-564-7873).

1. What are Biosolids?

They are nutrient-rich organic materials resulting from the treatment of domestic sewage in a treatment facility. When treated and processed, these residuals can be recycled and applied as fertilizer to improve and maintain productive soils and to stimulate plant growth or as a soil amendment to improve soil quality.

2. Is it acceptable for compost to be made from biosolids?

Yes. Composting is a biological treatment option for biosolids in which a bulking agent, such as wood chips, is mixed with the biosolids. Under controlled aerobic conditions, the bulking agent/biosolids mixture results in an accelerated microbial activity causing the temperature of the mixture to rise. Temperatures are maintained to levels for specific time periods such that pathogens are destroyed and volatile solids are degraded. The end product is a humus-like material that can be applied as a soil conditioner and fertilizer to gardens, food and feed crops, and rangelands.

3. Are there regulations for the land application of biosolids?

Yes. Under Section 405(d) of the Clean Water Act (CWA), EPA establishes numerical limits and management practices that protect public health and the environment from the reasonably anticipated adverse effects of chemical and microbial pollutants in sewage sludge. On February 19, 1993, EPA promulgated the 40 Code of Federal Regulations

(CFR) Part 503 Standards for the Use or Disposal of Sewage Sludge, resulting in numerical standards for ten metals and operational standards for microbial organisms. The 1993 rule established requirements for the final use or disposal of sewage sludge when it is: (1) applied to land as a fertilizer or soil amendment; (2) placed in a surface disposal site, including sewage sludge-only landfills; or (3) incinerated. These requirements apply to publicly and privately owned treatment works that generate or treat domestic sewage sludge and to anyone who uses or disposes of sewage sludge.

Biosolids that are to be land applied must meet these regulations and quality standards. The Part 503 rule governing the use and disposal of biosolids contain numerical limits for metals, pathogen reduction standards, site restrictions, crop harvesting restrictions, monitoring, and record keeping and reporting requirements for land applied biosolids as well as similar requirements for biosolids that are surface disposed or incinerated.

Additionally, CWA Section 405(d)(2)(C) states that EPA shall review the sewage sludge regulations not less often than every two years. The purpose of such reviews is to identify additional toxic pollutants that may be present in sewage sludge and, if appropriate, to promulgate regulations for those pollutants consistent with the requirements set forth in the CWA. For Biennial Review 2003, EPA announced the final results of its review of existing sewage sludge regulations to identify additional toxic pollutants that may need to be regulated. In fulfilling this commitment for the Biennial Reviews 2005 and 2007, the Agency searched known databases and the published literature designed to capture available information on occurrence, fate and transport, and human health or ecological effects, as well as other relevant information for pollutants that may occur in U.S. sewage sludge. The Agency subsequently analyzed the information identified by that search and determined that there is not sufficient information at this time on evaluated pollutants to conduct exposure and hazard assessment for deriving scientifically supportable numerical standards. EPA has completed Biennial Review 2009 and will summarize its results in 2010. The Agency will continue to assess the availability of sufficient information for pollutants during subsequent biennial reviews pursuant to the CWA Section 405(d)(2)(C).

In addition, EPA has completed the Targeted National Sewage Sludge Survey report and posted documents to EPA's Biosolids Web Site in January 2009. Reports are available at: www.epa.gov/waterscience/biosolids

Data from the survey will help determine exposure to target pollutants in biosolids and whether target pollutants may need to be evaluated for possible regulation pursuant to 40 CFR Part 503. Assessment and risk characterization of the 145 pollutants detected and quantified in the survey, where sufficient data exist, will be completed in 2010. Any regulatory decisions will be made subsequent to completing risk characterization and management decisions.

4. Are there regulations for the applications of compost made from biosolids?

Yes. As mentioned above, biosolids are regulated under the authority of Section 405(d) of the CWA. Any final product made from biosolids, such as compost, is also regulated under the CWA. However, composted biosolids, if treated to the highest standards, are considered as “exceptional quality”, and can be applied as any other fertilizer or soil amendment. Exceptional quality is characterized as having low inorganic pollutants, is pathogen free, and has reduced degradable components that attract vectors.

5. What is the difference between biosolids and sewage sludge?

Sewage sludge is defined in the Part 503 rule as the solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. The term biosolids is not used in the Part 503 rule, but EPA often uses the terms “biosolids” interchangeably with “sewage sludge.” Others outside of EPA often use the term biosolids to describe sewage sludge that has had additional processing for land application.

6. How are biosolids generated and processed?

Biosolids are created through the treatment of domestic wastewater generated from sewage treatment facilities, and separation of liquids from solids. In many larger wastewater treatment systems, pre-treatment regulations require that industrial facilities pre-treat their wastewater to remove many hazardous contaminants before it is sent to wastewater treatment. This prevents these substances from getting into the sewage sludge.

Once the wastewater reaches the plant, the sewage goes through physical, chemical and biological processes which clean the wastewater and remove the solids. The solids may be treated with any number of options (e.g., treatment with lime to raise the pH or aerobic and aerobic digestion). The wastewater treatment processes sanitize solids to control pathogens (disease-causing organisms, such as certain bacteria, viruses and parasites). In addition, certain management options result in reduced vector attraction. Vectors are any living organism capable of transmitting a pathogen from one organism to another. Vectors for sewage sludge pathogens would most likely include insects, birds, and rodents.

7. Where are biosolids used?

Biosolids are used in agriculture. Agricultural uses of biosolids, that meet strict quality criteria and application rates, have been shown to produce significant improvements in crop growth and yield. Nutrients found in biosolids, such as nitrogen, phosphorus and potassium and trace elements such as calcium, copper, iron, magnesium, manganese, sulfur and zinc, are necessary for crop production and growth. The use of biosolids

reduces the farmer's production costs and replenishes the organic matter that has been depleted over time. The organic matter improves soil structure by increasing the soil's ability to absorb and store moisture and makes metals more available to plants.

Biosolids have also been used successfully at mining sites to establish sustainable vegetation and reclaim abandoned mine sites with little or no topsoil, and forestry sites to promote rapid timber growth, allowing quicker and more efficient harvest of an important natural resource. Other uses include ornamental gardens, golf courses, and parks.

8. Where is compost used?

Biosolids may be mixed with wood chips to form compost. This compost may then be used as a soil amendment for vegetable gardens, nursery products, landscaping, and other agricultural uses.

9. How widespread is the use of sewage sludge, and how many farms use biosolids?

About 7.2 million dry tons of sewage sludge are used or disposed of annually in the United States. About 55% of that is applied to the land. The Agency estimates that sewage sludge is applied to less than 1% of available agricultural land in the United States annually. The remaining 45% were disposed of in municipal solid waste landfills, surface disposal units, or incineration facilities.

10. Are biosolids safe?

EPA believes that the Part 503 Standards for Use or Disposal of Sewage Sludge are protective of public health and the environment. In 1996, the National Academy of Sciences (NAS) reviewed practices, public health concerns and regulatory standards, and concluded that the use of these materials in the production of crops for human consumption when practiced in accordance with existing federal guidelines and regulations, presents negligible risk to the consumer, to crop production and to the environment. In 2002, the NAS again reviewed EPA's sewage sludge regulations and public health concerns and concluded that there is no documented scientific evidence that the Part 503 rule has failed to protect public health. However, the NAS also concluded that additional scientific work is needed to reduce persistent uncertainty about the potential for adverse human health effects from exposure to biosolids. The Agency believes that the current regulations are protective, but further research is needed. EPA recognizes that uncertainty persists and new challenges are emerging so we are working proactively to strengthen the science and fill the gaps in our knowledge.

11. What is the Agency's position on the use of biosolids?

EPA believes that the Part 503 standards for Use or Disposal of sewage sludge are protective of public health and the environment. EPA supports biosolids management in full compliance with the regulations. Biosolids management options allowable under

Part 503 include land application, surface disposal, and incineration. The choice regarding which management options to use are local decisions subject to state and federal regulations.

12. Where can I find out more about the regulations?

The biosolids rule is described in the EPA publication [A Plain English Guide to the EPA Part 503 Biosolids Rule](http://www.epa.gov/owm/mtb/biosolids/503pe/index.htm) (<http://www.epa.gov/owm/mtb/biosolids/503pe/index.htm>). This guide describes the Part 503 rule for the general reader. This guide is also available in hard copy.

EPA has also prepared [A Guide to the Biosolids Risk Assessments for the EPA Part 503 Rule](http://www.epa.gov/owm/mtb/biosolids/503rule/index.htm) (<http://www.epa.gov/owm/mtb/biosolids/503rule/index.htm>) which shows the many steps followed to develop the scientifically defensible safe set of rules.