Q&A's - Soil Contamination in Decatur, AL
Prepared by U.S. Environmental Protection Agency

A. DECATUR-SPECIFIC Q&A's

Further questions about information contained within this section of the document should be directed to EPA Region 4, Carl Terry – 404-562-8325

1. When did EPA learn about the high levels of Perfluorinated Compounds (PFCs) in Decatur Alabama?

In October 2008, EPA received analytical results from a limited set of samples collected and analyzed by EPA from agricultural sites in Alabama where sewage sludge from Decatur Utilities treatment plant was applied. The Decatur Utilities plant receives wastewater from domestic as well as industrial sources, including fluorochemical manufacturing and use facilities in the area. Municipal sewage sludge generated at the plant was land applied to approximately 5000 acres of privately owned agricultural fields in Lawrence, Morgan, and Limestone Counties from approximately 1995 to November 2008.

2. How long has EPA been investigating the PFC issue in Decatur, Alabama?

A PFC manufacturer located in Decatur, the 3M Corporation, sampled wastewater treatment plant sewage sludge from Decatur Utilities as part of its "Multi-city study" in 1999, and submitted the report to EPA in 2001. While the sampling was quite limited, the results for PFOS (perfluorooctyl sulfonate) in the sewage sludge from Decatur Utilities was elevated (2, 840 and 3,120 ppb based on two samples), although no PFOS, PFOA (perfluorooctanoic acid), or PFOSA (perfluorooctane sulfonamide) was detected in public drinking water supplies in 1999. 3M conducted additional sampling of public drinking water in 2005 and 2006 as part of environmental monitoring done under a Memorandum of Understanding with EPA. No PFOA, PFOS, PFBS (perfluorobutane sulfonate), or PFHS (perfluorohexane sultanate) were detected in drinking water samples from the Decatur public drinking water system in 2005 and 2006, although low levels were detected in a public drinking water system located downstream from the 3M facility on the Tennessee River, the East Lawrence / West Morgan public drinking water system. In 2007, EPA learned more about industrial discharge to the Decatur Utilities treatment plant, and obtained additional information on how the sewage sludge from the facility was being used. When EPA learned that sewage sludge from the Decatur Utilities plant was applied to agricultural fields, it collected a limited set of samples in a preliminary

survey to investigate potential environmental concentrations of PFCs in soil and sewage sludge. EPA first developed analytical methods to properly analyze those samples, and then produced results of sampling in October, 2008. Decatur Utilities made the decision to cease land application of biosolids in November 2008, after learning of these levels of PFCs in its biosolids.

3. Why did EPA collect samples in Decatur, Alabama?

In 2007 a company notified EPA that samples taken from a permitted discharge to the Decatur Utilities wastewater treatment plant contained higher levels of perfluorochemicals than previously known. Currently, these pollutants are not monitored pursuant to the Alabama Department of Environmental Management State Indirect Discharge permits for industries discharging to the Decatur Utilities wastewater treatment plant, nor monitored under the federal 40 CFR Part 503 regulations for land application of treated sewage sludge (biosolids). The company informed EPA that it had ceased this discharge. It is not known if this discharge to Decatur Utilities is representative of other discharges in the industry or only reflects discharge concentrations associated with this industry. When EPA learned that biosolids from the Decatur Utilities plant was applied to agricultural fields, it collected a limited set of samples in a preliminary survey to investigate potential environmental concentrations in soil and sewage sludge.

4. Are the levels of PFCs found in Decatur, Alabama high?

The initial screening results indicated elevated levels of perfluorooctyl sulfonate (PFOS), and perfluorooctanoic acid (PFOA) in sewage sludge and in soil that received sewage sludge when compared with other environmental sampling results from industrial and non-industrial sites. Screening data for PFOS ranged from 715 -1296 ppb in four samples analyzed by the EPA lab in Georgia, and 589-708 ppb in five samples analyzed by the EPA lab in North Carolina. Screening data for PFOA ranged from 818-2531 ppb in four samples analyzed by the lab in Georgia, and 55-2144 ppb in five samples analyzed by the lab in North Carolina. These results are for dried soil. Other PFCs were also analyzed. Because of the small sample size, it is not possible to make a definitive scientific interpretation of these numbers. However, these data suggest that more investigation was warranted, and EPA conducted additional samples of public drinking water, private well and surface water, and soil. The final results for the public drinking water and private well and surface water samples are available on the EPA Region 4 website: www.epa.gov/region4/water. Results of soil sampling are not yet available and are anticipated to be available by the end of June, 2009.

EPA has developed scientific drinking water Provisional Health Advisories for PFOA and PFOS to provide values which, when exceeded, suggest the need to discontinue use of a water source for drinking or cooking. The Provisional Health Advisories are 0.4 ppb for PFOA, and 0.2 ppb for PFOS. They reflect an amount of PFOA and PFOS that may cause adverse effects in the short term (weeks to months). EPA's action underscores the importance of pollution prevention and using health-based information.

EPA scientists analyzed grab samples of raw and finished waters that were collected from three Decatur, Alabama public drinking water systems. The levels of PFOA and PFOS recently analyzed by EPA in community water systems in Lawrence and Morgan Counties are lower than the Provisional Health Advisory. Two systems, Decatur and Moulton, had no detects of PFOA or PFOS. One system, the East Lawrence/W. Morgan system had detects of PFOA and PFOS at the 0.02 ppb level, well below the Provisional Health Advisory of 0.4 for PFOA and 0.2 for PFOS. Other PFCs were also analyzed. Based on its current understanding, EPA believes residents may rely upon the public water systems in the area.

EPA collected additional samples to determine if PFOA/PFOS has migrated over or through the soils to ground water or surface water and contaminated drinking water supplies. Two of the six private drinking water wells sampled had PFOA levels above EPA's Provisional Health Advisory level and none had levels above the PFOS Provisional Health Advisory level. These two wells had PFOA levels of 2.2 ppb and 0.6 ppb respectively. Both of the residences with elevated PFOA levels were quickly provided with bottled water and then connected to the public water supply system by Decatur Utilities and a group of local industries in the area. Other PFCs were also analyzed. The agency is evaluating the significance of the other PFCs detected.

PFOA, PFOS and other PFCs were also detected in many of the samples collected from ponds in the vicinity of the land application sites. These concentrations varied significantly; PFOA ranged from non-detect to 11 ppb and PFOS ranged from non-detect to .06 ppb.

In March 2009, 30 soil samples in or near the fields with the highest applications of biosolids were collected and analyzed.

The final report indicated the following results:

- For PFOA, the results ranged from no detectable levels up to 317 ppb.
- For PFOS, the results ranged from no detectable levels up to 408 ppb.

In response to the detection of PFOA and PFOS in biosolids-applied soils, EPA released (in October 2009) 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 for PFOA and 6,000 ppb for PFOS. None of soil samples collected by EPA in 2007 or 2009 exceeded the soil screening values for protection of children's health (which are also protective of adult health.)

In August 2009, at the request of EPA, Decatur Utilities and a group of local businesses conducted a comprehensive survey to identify any additional private drinking water wells located within a specified distance from the biosolids application sites. Twelve wells were identified and sampled during this investigation. The results indicate that none of the wells have PFOA or PFOS levels above EPA's drinking water provisional health advisory.

The report indicates the following results:

- For PFOA, the results ranged from no detectable levels up to 0.061 ppb.
- For PFOS, the results ranged from no detectable levels up 0.067 ppb.

Decatur Utilities and the group of local businesses will conduct additional sampling on those drinking water wells with detectable levels of PFOA or PFOS.

5. What is the source of the elevated levels of PFCs found in Decatur, Alabama?

EPA and the Alabama Department of Environmental Management (ADEM) are investigating the sources of the elevated levels of PFCs found in Decatur, Alabama. The Decatur Utilities plant receives wastewater from domestic as well as industrial sources, including fluorochemical manufacturing and use facilities in the area. EPA and ADEM are working with Decatur Utilities and their contractor that applied the sewage sludge to identify the potential sources. To date, EPA has identified four known sources of PFCs to the Decatur Utilities Plant: the 3M Company, Daikin America, Inc., Toray Carbon Fibers America, Inc., and the Morgan County Landfill leachate. Decatur Utilities and ADEM are currently collecting data and information to determine other sources of PFCs.

6. What is EPA doing about the levels of PFCs in Decatur, Alabama?

EPA has developed scientific drinking water Provisional Health Advisory values of 0.4 ppb for PFOA and 0.2 ppb for PFOS. EPA analyzed drinking water from three public water systems in Lawrence and Morgan Counties. Two of the systems had no detection of PFOA or PFOS in the raw or finished water (Decatur and Moulton.) One system, the East Lawrence/West Morgan systems had concentrations of PFOA and PFOS at the 0.02 to 0.03 ppb level, well below the Provisional Health Advisory for PFOA of 0.4 ppb and for PFOS of 0.2 ppb. Based on its current understanding, EPA believes the levels in the East Lawrence/West Morgan systems are not of concern and residents may rely upon the area public drinking water systems. EPA collected additional samples to determine if PFOA/PFOS has migrated over or through the soils to ground water or surface water and contaminated drinking water supplies. Two of the six private drinking water wells sampled had PFOA levels above EPA's Provisional Health Advisory level and none had levels above the PFOS Provisional Health Advisory level. These two wells had PFOA levels of 2.2 ppb and 0.6 ppb respectively. Both of these residents with elevated PFOA levels were quickly provided with bottled water and within days connected to the public water supply system by Decatur Utilities and a group of local industries in the area. Other PFCs were also analyzed. The agency is evaluating the significance of the other PFCs detected. In the future, if any other drinking water wells are found to exceed the drinking water advisory levels for PFOA or PFOS, EPA anticipates these residences will be supplied alternative water.

In May 2009, USDA sampled blood and tissue from selected cows/steers from farms where Decatur Utilities biosolids were land applied in the past (seven animals associated with "high" application fields; two animals from "minimally" applied fields). The final

analytical results from these tests indicate the values are below USDA's minimum proficiency level (MPL) of 20 ppb for both PFOS and PFOA; therefore, these samples are reported as not detectable for PFOS and PFOA. Based on USDA estimates for human health concerns using the MPL as an upper limit value and current Decatur area exposure patterns, this testing supports USDA's finding that there is no reason to believe there are human health concerns with consuming the meat processed from cattle grazed on lands receiving these biosolids.

Also in May 2009, FDA sampled and analyzed two milk samples, one from a single cow and one from a bulk milk tank, for PFOA and PFOS from a dairy farm located in the Decatur area that received limited application of Decatur Utilities biosolids. FDA testing found no PFOA or PFOS in the milk sample from the single cow. A very low level (0.16 ppb) of PFOS was detected in the bulk tank milk sample. FDA is currently testing retail milk samples collected throughout the U.S. for PFOA and PFOS to obtain additional information on background levels for PFCs in milk. To date, FDA testing found no PFOA in any of the 18 retail milk samples. A very low level of PFOS (0.038 ppb) was detected in one retail milk sample.

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

7. What is EPA doing to determine if there is a problem with drinking water quality?

EPA has conducted ground and surface water sampling to determine if PFOA has migrated into drinking water supplies. EPA also collected water samples to determine if PFOA/PFOS has migrated over or through the soils to ground water or surface water and contaminated drinking water supplies. Two of the six private drinking water wells sampled had PFOA levels above EPA's Provisional Health Advisory level and none had levels above the PFOS Provisional Health Advisory level. These two wells had PFOA levels of 2.2 ppb and 0.6 ppb respectively. Both of these residents with elevated PFOA levels were quickly provided with bottled water and within days connected to the public water supply system by Decatur Utilities and a group of local industries in the area. Other PFCs were also analyzed. The agency is evaluating the significance of the other PFCs detected. In the future, if any other drinking water wells are found to exceed the drinking water advisory levels for PFOA or PFOS, EPA anticipates these residences will be supplied alternative water. EPA will keep the public informed of any additional actions we recommend to limit human and environmental exposures to PFOA.

In August 2009, EPA is required the 3M Company, Daikin America, Inc., Toray Carbon Fibers America, Inc., Decatur Utilities, and Synagro to conduct an inventory of private water wells in the vicinity of the land application sites. All drinking water wells within one mile of high application sites, one-half mile of moderate application sites, and one-quarter mile of low application sites were sampled and tested for PFOA, PFOS and several other PFCs that degrade to PFOA or PFOS. Twelve wells were identified and

sampled during this investigation. The results indicate that none of the wells have PFOA or PFOS levels above EPA's drinking water provisional health advisory.
The report indicates the following results:

- For PFOA, the results ranged from no detectable levels up to 0.061 ppb.
- For PFOS, the results ranged from no detectable levels up 0.067 ppb.

Decatur Utilities and the group of local businesses will conduct additional sampling on those drinking water wells with detectable levels of PFOA or PFOS.

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

EPA has collected samples from private drinking water wells in the area where sewage sludge from Decatur Utilities was applied. Two of the six private drinking water wells sampled had PFOA levels above EPA's Provisional Health Advisory level and none had levels above the PFOS Provisional Health Advisory level. These two wells had PFOA levels of 2.2 ppb and 0.6 ppb respectively. Both of these residents with elevated PFOA levels were quickly provided with bottled water and then connected to the public water supply system by Decatur Utilities and a group of local industries in the area. Other PFCs were also analyzed. The agency is evaluating the significance of the other PFCs detected. In the future, if any other drinking water wells are found to exceed the drinking water advisory levels for PFOA or PFOS, EPA anticipates these residences will be supplied alternative water.

In addition, some water filtration devices (point-of-use devices that are installed at an individual tap, faucet, or outlets) may remove some perfluorinated 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 perfluorinated compounds, and ask for advice on how often they should change their filters.

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

No. EPA has developed scientific drinking water Provisional Health Advisory values of 0.4 ppb for PFOA and 0.2 ppb for PFOS. EPA analyzed drinking water from 3 public water systems in Lawrence and Morgan Counties. Two of the systems had no detection of PFOA or PFOS in the raw or finished water (Decatur and Moulton.) One system, the East Lawrence/West Morgan systems had concentrations of PFOA and PFOS at the 0.02 to 0.03 ppb level, well below the Provisional Health Advisory for PFOA of 0.4 ppb and for PFOS of 0.2 ppb. Based on its current understanding, EPA believes the levels in the East Lawrence/West Morgan systems are not of concern and residents may rely upon the area public drinking water systems.

10. Will residents in the area be evaluated for exposure to PFCs?

In collaboration with EPA, the ATSDR will voluntarily sample and test the blood of selected residents in the Decatur area to determine the concentration of PFOA, PFOS and other PFCs in these residents' blood. ATSDR is seeking to test residents who have potentially been exposed to PFCs released by the biosolids-applied soils or from contaminated well water. Residents eligible for testing will receive a letter from ATSDR. The testing is free, and will be conducted in spring 2010. Results will be mailed to participants within six months after the blood is drawn.

Individuals participating in the testing will learn the concentration of PFCs in his/her blood, and will be provided with information on PFCs. Participants will be informed on whether their test results indicate levels are below or above the average of most people in the United States population. The individual's blood test results will be kept private, and testing is free to qualified participants.

Individuals participating in the testing should also know that no other medical tests, diagnosis, or treatment will be offered. Also, scientists do not definitively know how PFC concentrations in the blood can affect a person's health, and until more research is completed, it is not possible to know:

1) If the PFC levels in their blood will make a person sick now or later in life;
2) If a person's current health problems are related to the PFC levels found in their body;
3) Or, how or from where the PFC chemicals entered their body.

Because of the wide spread 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 an average of about two to four 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 PFCs may affect humans. Because many factors can contribute to health problems, it is difficult to link a person's health problem directly to a concentration of PFCs in the blood. Testing of a person's PFC blood concentrations can be used to determine if exposures have occurred.

ATSDR is best able to answer questions related to the PFC blood exposure investigation and can be contacted by e-mail or telephone as follows:

Ketna Mistry, M.D., ATSDR
kmistry@cdc.gov, Phone: 770-639-3311 or 1-800-232-4636
When calling, ask for Ketna Mistry

11. Are my cattle/poultry/crops/feed safe?

In May 2009, USDA sampled blood and tissue from selected cows/steers from farms where Decatur Utilities biosolids were land applied in the past (seven animals associated with "high" application fields; two animals from "minimally" applied fields). The final analytical results from these tests indicate the values are below USDA's minimum proficiency level (MPL) of 20 ppb for both PFOS and PFOA; therefore, these samples are reported as not detectable for PFOS and PFOA. Based on USDA estimates for human health concerns using the MPL as an upper limit value and current Decatur area exposure patterns, this testing supports USDA's finding that there is no reason to believe there are human health concerns with consuming the meat processed from cattle grazed on lands receiving these biosolids.

Also in May 2009, FDA sampled and analyzed two milk samples, one from a single cow and one from a bulk milk tank, for PFOA and PFOS from a dairy farm located in the Decatur area that received limited application of Decatur Utilities biosolids. FDA testing found no PFOA or PFOS in the milk sample from the single cow. A very low level (0.16 ppb) of PFOS was detected in the bulk tank milk sample. FDA is currently testing retail milk samples collected throughout the U.S. for PFOA and PFOS to obtain additional information on background levels for PFCs in milk. To date, FDA testing found no PFOA in any of the 18 retail milk samples. A very low level of PFOS (0.038 ppb) was detected in one retail milk sample.

At this time, there is not adequate data to provide advice to farmers/consumers regarding food grown on fields treated with biosolids from the Decatur waste water treatment facility. Although the multiple components of feed and the subsequent dilution of the products exposed to the biosolids would likely contribute to reducing the risk associated with the feed and products derived from the animals, we do not have enough information at this time to make a definitive determination. FDA and 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

B. PFOA and PFOS 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 perfluorinated compounds (PFCs)?

Perfluorinated compounds, also known as or perfluorochemicals, 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 textile. 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 U.S. population. 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 perfluorinated compounds and their potential risks?

In the late 1990's, EPA received information from industry under TSCA Section 8(e) indicating that perfluorooctyl sulfonate (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 U.S. population. Studies indicated that PFOA can cause developmental and other adverse effects in laboratory animals. PFOA also appears to remain in the human body for a long time. 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. This new information, which is still under development, will assist the Agency in determining if there are potential risks and what risk management steps may be appropriate.

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 (ECAs) and Memoranda 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's Office of Research and Development has collaborated with OPPT and is conducting research focused on the health effects and exposures to PFOA and other perfluorinated chemicals. 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 2010/2015 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 memoranda of understanding. 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 C8 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 50 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.

Although more time will be needed to assess the full impact of steps taken to date, a possible indication of progress can be found in a U.S. Centers for Disease Control and Prevention (CDC) study, published in 2007, which reported significant reductions in human blood concentrations of PFOS and PFOA from 1999-2000 compared to the most recent data in 2003-2004. The geometric mean for PFOA in human blood was reduced by 25% over this period and PFOS was reduced by 32%. The report concluded that these reductions were most likely related to changes brought about by EPA efforts on these chemicals and other related efforts by government and industry.

6. What are the concerns related to PFOS?

Studies have raised concerns about the potential developmental, reproductive, and systemic toxicity of PFOS. 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 perfluorochemicals?

Consumer products made with perfluorochemicals 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 regulatory action under the Toxic Substances Control Act (TSCA) to limit any future manufacture or importation of 88 PFAS (perfluoroalkyl sulfonate) chemicals specifically included in that phaseout. EPA uses the generic term perfluoroalkyl sulfonates (PFAS) to encompass more generally the category of perfluorinated compounds, which includes those with eight carbons (C8) as well as those with higher and lower amounts of carbon. The Agency uses the term PFOS to represent only those chemical substances that are predominantly C8.

These significant new use rules (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 U.S., 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.

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. 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 CFR 40 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, Section 405(d)(2)(C) of the CWA 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 (www.epa.gov/waterscience/biosolids). 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. 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).

3. 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.

4. 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 or transmitting a pathogen from one organism to another. Vectors for sewage sludge pathogens would most likely include insects, birds, and rodents.

5. 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.

6. 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.

7. 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 there is much we don't know. 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.

8. 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.

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

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

In addition to the Plain English Guide, EPA has prepared:
A Guide to the Biosolids Risk Assessments for the EPA Part 503 Rule
(http://www.epa.gov/owm/mtb/biosolids/503rule/index.htm)
This guide shows the many steps followed to develop the scientifically defensible safe set of rules.