

**OVA-POLLUTION IN THE POTOMAC: EGG-BEARING
MALE BASS AND IMPLICATIONS FOR HUMAN
AND ECOLOGICAL HEALTH**

HEARING

BEFORE THE

**COMMITTEE ON
GOVERNMENT REFORM**

HOUSE OF REPRESENTATIVES

ONE HUNDRED NINTH CONGRESS

SECOND SESSION

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OVA-POLLUTION IN THE POTOMAC: EGG-BEARING MALE BASS AND IMPLICATIONS FOR HUMAN AND ECOLOGICAL HEALTH

WEDNESDAY, OCTOBER 4, 2006

HOUSE OF REPRESENTATIVES,
COMMITTEE ON GOVERNMENT REFORM,
Washington, DC.

The committee met, pursuant to notice, at 1:05 p.m., in room 2154, Rayburn House Office Building, Hon. Tom Davis (chairman of the committee) presiding.

Present: Representatives Tom Davis, Cummings, Van Hollen, and Roppersberger.

Also present: Representatives Gilchrest and Moran.

Staff present: David Marin, staff director; Larry Halloran, deputy staff director; Keith Ausbrook, chief counsel; A. Brooke Bennett, counsel; Michael Galindo and Benjamin Chance, clerks; Ali Ahmad, staff assistant; Phil Barnett, minority staff director/chief counsel; Robin Appleberry, Krista Boyd, and Alexandra Teitz, minority counsels; Earley Green, minority chief clerk; and Jean Gosa, minority assistant clerk.

Chairman TOM DAVIS. Good afternoon, and welcome to this oversight hearing on egg-bearing male fish in the Potomac River. Recent Washington Post stories on this topic have spawned a great deal of interest, and justifiable concern, about the implications of this odd phenomenon for the environment, for the fish and for us.

Today we will hear from those who watch over what goes into, and what comes out of, our vital regional waterway, the Potomac River.

First, let us understand just how far and wide the Potomac reaches. If you look at the green line on this map, you will see that the river runs from West Virginia into the Chesapeake Bay. Its uses are as varied as the communities through which it meanders. Humans use it for boating and recreational fishing. Fish and wildlife use it as their habitat. And local utilities use it to provide drinking water. In other words, what happens in the Potomac doesn't affect only one species of fish in Washington, DC. It has repercussions for all the life that thrives on its flow.

So, what about these fish that scientists have found in our river? Do they have three heads? Three eyes? Are they growing legs? No. That is not the case at all. The findings by the U.S. Geological Survey and the Fish and Wildlife Service are far subtler, but troubling nevertheless. What they and other researchers have found is egg yolk and immature ova being produced in male reproductive or-

gans. That's what is known. Still unknown are the exact causes, pathways and mechanisms of this unusual biology activity.

Some believe the fish could be reacting to organic chemical compounds such as human estrogen from processed sewage or animal estrogen from agricultural run-off. There is also the possibility the reaction has been triggered by manmade chemicals in pesticides and cosmetics, or it could be a combination of both. Those questions are still under investigation, and we look forward to hearing from Department of Interior representatives about their research and findings to date.

So, what about the drinking water coming from the Potomac? How safe is it, and who is responsible for keeping it safe? This seemingly straightforward question has a complicated answer. In 1974, Congress passed the Safe Drinking Water Act, requiring the Environmental Protection Agency to set standards and testing requirements for contaminants. Those requirements are then implemented by the States. Because it runs through so many jurisdictions, the Potomac presents an interesting and challenging case. Testimony by our witnesses today will shed some light on the difficulties of navigating through the twisting rapids and rocky shoals of Federal and State water quality regulations.

The good news is that many water utilities meet or exceed current EPA standards. But the menu of chemicals and contaminants finding their way into our waters is constantly changing, and the science of detecting and eliminating those contaminants, frankly, has to play catch-up.

EPA, along with other Federal agencies, has been studying chemicals and compounds thought to be causing the intersex fish phenomenon. We will hear from them, and from local water utilities, on how they advance the science and maintain vigilant testing regimes to keep harmful compounds out of our water.

At the end of the day, researchers have yet to determine what is scrambling the bass eggs. The preliminary conclusion as of now is that the fish ova-pollution probably has no impact on human health. Still, as the chairman of the House committee with jurisdiction over the District of Columbia, and as the co-chair of the Chesapeake Bay Watershed Task Force, I and many others want to know more. We need to be certain these sensitive biological markers are being monitored and studied so we can detect and eliminate potentially harmful substances from the river ecosystem before they cause downstream environmental or human health effects.

I would like to thank our witnesses for being here today, and we look forward to hearing from each of you.

I would ask unanimous consent that the distinguished gentleman from the Commonwealth of Virginia Mr. Moran be allowed to participate in today's hearing.

Hearing no objection, it is so ordered.

[The prepared statement of Chairman Tom Davis follows:]

Government Reform Committee
“Ova-Pollution in the Potomac: Egg-Bearing Male Bass and Implications
for Human and Ecological Health”

Opening Statement of Chairman Tom Davis

October 4, 2006

Good afternoon, and welcome to this oversight hearing on egg-bearing male fish in the Potomac River. Recent *Washington Post* stories on this topic have spawned a great deal of interest, and justifiable concern, about the implications of this odd phenomenon for the environment, for the fish and for us. So today we will hear from those who watch over what goes into, and what comes out of, a vital regional waterway, the Potomac River.

First, let’s understand just how far and wide the Potomac reaches. If you look at the green line on this map, you will see that the river runs from West Virginia to the Chesapeake Bay. Its uses are as varied as the communities through which it meanders. Humans use it for boating and recreational fishing. Fish and wildlife use it as their habitat. And local utilities use it to provide drinking water. In other words, what happens in the Potomac doesn’t affect only one species of fish in Washington, D.C. It has repercussions for all the life that thrives on its flow.

So, what about these fish that scientists have found in our river? Do they have three heads? Three eyes? Are they growing legs? No. That's not the case at all. The findings by the US Geological Survey and the Fish and Wildlife Service are far subtler—but troubling nevertheless. What they and other researchers have found is egg yolk and immature ova being produced in male reproductive organs. That's what is *known*. Still *unknown* are the exact causes, pathways and mechanisms of this unusual biological activity.

Some believe the fish could be reacting to organic chemical compounds such as human estrogen from processed sewage or animal estrogen from agricultural runoff. There is also the possibility the reaction is being triggered by manmade chemicals in pesticides and cosmetics. Or, it could be a combination of both. These questions are still under investigation, and we look forward to hearing from Department of Interior representatives about their research and findings.

So, what about the drinking water coming from the Potomac? How safe is it, and who is responsible for keeping it safe? This seemingly straightforward question has a complicated answer. In 1974, Congress passed the **Safe Drinking Water Act** requiring the Environmental Protection Agency to set standards and testing requirements for contaminants. Those requirements are then implemented

by the states. Because it runs through so many jurisdictions, the Potomac presents an interesting and challenging case. Testimony by our witnesses today will shed some light on the difficulties of navigating through the twisting rapids and rocky shoals of federal and state water quality regulations.

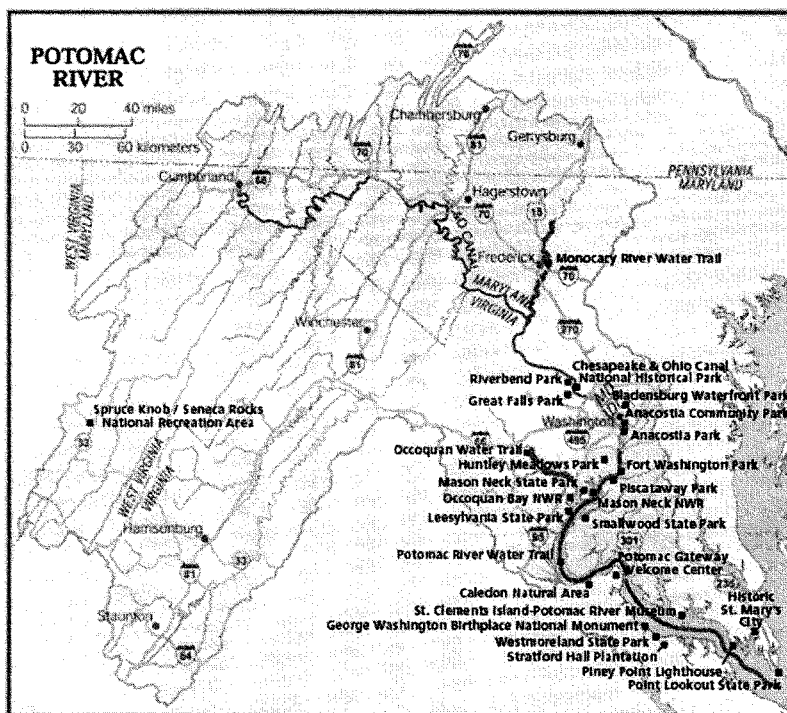
The good news is that many water utilities meet *or exceed* current EPA standards. But the menu of chemicals and contaminants finding their way into our waters is constantly changing. And the science of detecting and eliminating those contaminants, frankly, has to play catch-up. EPA, along with other federal agencies, has been studying chemicals and compounds thought to be causing the “intersex” fish phenomenon. We will hear from them, and from local water utilities, on how they advance the science and maintain vigilant testing regimes to keep harmful compounds out of our water.

At the end of the day, researchers have not yet determined what is scrambling the bass eggs. The preliminary conclusion as of now is that the fish “ova-pollution” probably has no impact on human health. Still, as the Chairman of the House Committee with jurisdiction over the District of Columbia, and as the co-chair of the Chesapeake Bay Watershed Task Force, I and many others want to know more. We need to be certain these sensitive biological markers are being

monitored and studied so we can detect and eliminate potentially harmful substances from the river ecosystem before they cause downstream environmental or human health effects.

I would like to thank our witnesses for being here today, and we look forward to hearing from each of you.

ATTACHMENT 1 – Potomac River



Chairman TOM DAVIS. Mr. Cummings.

Mr. CUMMINGS. Thank you so much, Mr. Chairman. I thank you for holding this vitally important hearing to investigate the discovery of abnormalities in fish in the Potomac Watershed and possible implications for human and ecological health.

The Potomac River supplies about 75 percent of the drinking water consumed by almost 4 million residents of the metropolitan Washington region, which includes the District of Columbia, Montgomery County, Arlington and Fairfax County. I think we can all agree on the need to make sure that this water is clean and safe for human consumption.

Any safety breach of the Potomac water supply has the potential to create a public health crisis of great magnitude. So, with this in mind, I am terribly concerned about the recent discovery that bass in the Potomac are displaying significant abnormalities.

Specifically, researchers found that more than 80 percent of the male smallmouth bass they sampled were growing eggs, and 7 of 13 male largemouth bass had unusual feminine characteristics. As you know, Mr. Chairman, scientists study the health of fish and other similarly sized species to determine the health of the ecological system in which they reside. That is why many have taken the recent findings with regard to smallmouth and largemouth bass in the Potomac as an indication that problems exist in the entire ecosystem, and possibly in the human population as well.

Researchers attribute the fish abnormalities to pollution in the waters in the form of endocrine disruptors, which are chemicals that interfere with human and animal biological processes. Endocrine-disrupting compounds include natural and synthetic hormones, pesticides and compounds used in plastics.

In 1998, the U.S. Geological Survey noted that at least 45 synthetic chemicals have been identified as potential endocrine disruptors. Unfortunately, we do not know which of these chemicals or which combination of chemicals is creating the problem we are seeing in the Potomac. We similarly do not know with great certainty what the impact on humans will be. The effects of human exposure to endocrine disruptors are not well understood, but some have raised concern that exposure could lead to reproductive abnormalities or cancer.

Faced with this possibility, we cannot afford to waste time in investigating and addressing the problem that has been identified, but I understand that this has not been the case. The EPA has not yet implemented its Endocrine Disruptor Screening Program 10 years after Congress mandated that it do so, and 7 years after the statutory deadline. This is simply inexcusable.

I look forward to hearing from our witnesses today on how we can address this problem in an effective and efficient way. Again, Mr. Chairman, I thank you for calling this hearing.

Chairman TOM DAVIS. Thank you, Mr. Cummings.

[The prepared statement of Hon. Elijah E. Cummings follows:]

U.S. House of Representatives
109th Congress

Opening Statement

Representative Elijah E. Cummings, D-Maryland

Full Committee Hearing:
“Ova-Pollution in the Potomac:
Egg-Bearing Male Bass and Implications for Human and Ecological Health”
Committee on Government Reform

October 4, 2006

Mr. Chairman,

Thank you for holding this vitally important hearing to investigate the discovery of abnormalities in fish in the Potomac watershed, and possible implications for human and ecological health.

The Potomac River supplies about 75 percent of drinking water consumed by the almost four million residents of the metropolitan Washington region, which includes the District of Columbia, Montgomery County, Arlington County, and Fairfax County.

I think we can all agree on the need to make sure this water is clean and safe for human consumption. Any safety breach of the Potomac water supply has the potential to create a public health crisis of great magnitude.

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Endocrine disrupting compounds include natural and synthetic hormones, pesticides, and compounds used in plastics. In 1998, the U.S. Geological Survey noted that at least 45 synthetic chemicals have been identified as potential endocrine disruptors.

Unfortunately, we do not know which of these chemicals—or which combination of chemicals—is creating the problem we are seeing in the Potomac.

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Faced with this possibility, we cannot afford to waste time in investigating and addressing the problem that has been identified.

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The EPA has not yet implemented its endocrine disruptor screening program, ten years after Congress mandated that it do so, and seven years after the statutory deadline.

This is simply inexcusable.

I look forward to hearing from our witnesses today how we can address this problem in an effective, efficient way.

Thank you, Mr. Chairman, I yield back.

Chairman TOM DAVIS. Mr. Moran.

Mr. MORAN. Thank you, Mr. Chairman. I thank you for your statement. Mr. Cummings and my concerns reflect those that both of you have stated. It does seem that we are talking about endocrine-disrupting chemicals. There was a book written by a woman several years ago that brought to light this phenomenon, but I didn't know that it was going to come so close to home in the Potomac River.

The problem is that this may very well be the tip of an iceberg. Clearly we have a situation that merits a good deal of attention, and that's why a hearing like this is so important to see what kind of attention is being given it by the experts.

There was some written testimony provided by Dr. Myers of the U.S. Geological Service, a survey, and they—samples from 95 different emerging contaminants, drug, hormones, detergents, disinfectants, insecticides, fire retardants and so on. He found that at least one of those chemicals was present in 80 percent of the streams in this area, and in 75 percent of the streams there was a mixture of those potentially toxic chemicals.

Now, they all have different reactions, but there's been very little research on what happens when different chemicals are put together, and I think we need a lot more research to see what the combined reaction might be of some of these chemicals that are so omnipresent in our water supply that we—I am afraid that the direction in which we are going is sort of like a ship without a radar.

We don't know which specific chemicals are responsible for this—our situation with regard to the fish. We don't know what constitutes a safe and/or a harmful concentration of chemicals, and we don't know what we can do in order to reduce our exposure to them. But until we do know the answers to those questions, the public's health could well be jeopardized.

So I think this is a very serious issue, an important hearing, and I appreciate you, Mr. Chairman, for calling the hearing. And for my two very good friends and colleagues on either side of us, they came all the way down from Baltimore to attend it, so it shows they recognize the importance of it.

Chairman TOM DAVIS. Thanks very much. Mr. Ruppertsberger. Thanks very much for coming down from Baltimore.

Mr. RUPPERSBERGER. The Government Reform Committee is the investigative arm, and there are a lot of things that we look at, but when it comes to an issue like this, it's important because of our water supply, because of how it affects us and how it affects our way of life.

This discovery of intersex fish in the Potomac is clearly a problem. What we do know is that small and largemouth bass with male organs and female characteristics as an example of carrying immature eggs is a problem in the region. We do know this is caused by endocrine disruptors in the water, and endocrine disruptors are found in everything from chemicals to keep barnacles off boats, perfume and plastics.

Basically we can find this everywhere and in everything. These chemicals can lock onto receptors and animals and force the organism to react differently. What we are finding is that male fish are being affected by displaying female traits. Now, I am concerned

about this because not only does it show our local watershed environment is in distress, but I am concerned for the safety of our drinking water. It is still unclear about the effects of endocrine disruptors on people. There is evidence that ingested amounts of these chemicals can slow the development of younger people, but may have no effect on adults.

Intersex fish have been found around the country. Because of this concern last year the EPA convened a meeting in Las Vegas to start to look into a large source of endocrine disruptors from personal pharmaceutical products. It gathered scientists, academia, industry and government together to look at the scope of the problem and how it is affecting our Nation. I know some water systems have already employed reverse osmosis water treatment systems to pull out and collect organic chemicals and endocrine disruptors. I applaud those steps, and hopefully we can encourage local water facilities to do the same.

The way I see it, we must first secure the water supply; second, find the source of the pollutants; and establish a system to address the problem. These are the opportunities. These are the opportunities to see environmentalists and consumer safety, government and industry work together on solutions. My concern is that we always seem to have fixes for the tail end of solutions. I really hope that we address the source of the problem.

Chairman TOM DAVIS. Thank you very much.

[The prepared statement of Hon. C.A. Dutch Ruppertsberger follows:]

Statement of Congressman C.A. Dutch Ruppersberger
Committee on Government Reform
Full Committee
“Ova-Pollution in the Potomac: Egg-Bearing Male Bass
and Implications for Human and Ecological Health
2154 Rayburn HOB – 1:00 P.M.
October 4, 2006

The discovery of intersex fish in the Potomac is a problem.

What we do know is that small and large bass mouth with male organs and female characteristics like carrying immature eggs is appearing in the region.

We know that this is caused by endocrine disruptors in the water. Endocrine disruptors are found in everything from chemicals to keep barnacles off of boats to perfume and plastics. Basically we can find this everywhere and in everything. These chemicals can lock onto receptors in animals and force the organism to react differently. What we are finding is that male fish are being affected by displaying female traits.

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The way I see it we must first secure the water supply.

Second, find the source of the pollutants and establish a system to address the problem. These are the opportunities to see environmentalist, consumer safety, government and industry work together on solutions.

My concern is that we always seem to have fixes for the tail end on solutions. I really hope that we address the source of the problem.

Chairman TOM DAVIS. I would ask unanimous consent that the distinguished gentleman from the State of Maryland Mr. Gilchrest be allowed to participate in today's hearing as well. Without objection.

Mr. Gilchrest.

Mr. GILCHREST. Mr. Chairman, thank you for allowing me to sit on the dais today and for the other Members from Virginia and Maryland who show a keen interest in this particular issue.

I don't think we probably should be surprised at this issue. I think what we have done for the past 100 years, through human activity, and with the development and discharge of persistent toxic chemicals, is turning much of our land area, our water area, into the kind of habitat that the Earth hasn't seen for several billions of years, and what happens under those circumstances is that some of the most primitive life forms that in the subsequent aeons of time have evolved become more pervasive.

What I would like to know, through the course of your testimony—and I appreciate all of you for coming today—is do you have a list of the fairly well-known persistent toxic chemicals that are used or have been used in the manufacturing, industrial sector for many, many decades now, and which of those persistent toxic chemicals are similar to the natural process of reproduction?

I guess the question I am asking is do you have a list of persistent toxic chemicals that we know have some similarity to the kind of molecules in the endocrine system that is the reproductive system or the process of reproduction? Can those persistent toxic chemical molecules that are similar to the molecules in the reproduction system mimic those natural molecules and cause this kind of a situation, this kind of a problem?

The landscape around the waterways has been deforested. We have filled in wetlands. We have paved over areas. We took a rifleshoot for these persistent toxic chemicals right into our water bodies. We have seen this now for more than a decade, perhaps for 20 years, in reptiles and fish all over the world, whether it's the Everglades, the Thames River, the Susquehanna River.

We also know in certain areas not only because of agriculture, not only because of pesticides and herbicides, not only because of chlorine, but we also know it's in sewage sludge. So it should be no surprise that we have a pretty pervasive problem that because of human activity has not been compatible with nature's design.

Once we recognize that, it takes a lot of will, political will, community will, will from people that are making these policies or evaluating these situations, it will take a concerted effort, scientifically and politically and human activity, whether we are dealing with sewage or persistent toxic chemicals mimicking the reproductive system in the endocrine system—whatever it takes we need to make human activity much more compatible with nature's design if there is going to be any in the decades or centuries to come.

But I do want to thank the chairman for holding this hearing, and I look forward to the testimony of the witnesses.

Chairman TOM DAVIS. Thank you, Mr. Gilchrest.

Mr. Van Hollen.

Mr. VAN HOLLEN. Thank you, Mr. Chairman. I want to thank you and my colleagues for organizing the hearing and for the wit-

nesses that will be testifying today. I don't have a lot to add to what's been said, but I do believe that we need to address this issue and get to the bottom of it quickly.

I think too much time has gone by since Congress originally asked the EPA to look at this issue. I am sure we will hear testimony as to exactly what is being done at EPA and the other agencies that deal with the drinking water in this region.

But this is clearly an alarming picture where we have seen the spread of the impact of the endocrine inhibitors on fish populations.

I guess there was a first indication of this many years ago. It seemed to have been isolated. That seems to have been spread. There are obviously a couple of questions that we need to answer for the public. One is exactly what are the causes of this? No. 2, what are all the sources of this? Obviously the major question we all have is what is the impact on human health and the public health?

So I hope we can begin to get to the bottom of those questions. As Mr. Cummings said, and others refer to it, the Congress did ask EPA some time ago to identify some of these chemicals and regulate them, if needed. As I understand it, we were supposed to have a program in place by 1999. We have had lots of studies and advisory groups. We haven't moved forward on this issue. I know it's a complicated issue. I know the science is difficult.

On the other hand, it is a question that, you know, has potentially huge widespread impact. So I think we do need to address this with greater urgency.

Chairman TOM DAVIS. We now move to our first panel of witnesses. We have the Honorable Benjamin Grumbles, no stranger to this committee, the Assistant Administrator of the Office of Water for the Environmental Protection Agency; the Honorable Mark Myers, the new Director of the U.S. Geological Survey, just sworn in, welcome and congratulations; Dr. Susan Haseltine, who is the Assistant Director of Biology for the U.S. Geological Survey. Thank you, Doctor, for being with us today; and Dr. Gregory Masson, Chief, Branch of Environmental Contaminants for the U.S. Fish and Wildlife Service.

It's our policy that we swear in witnesses before you testify.

[Witnesses sworn.]

Chairman TOM DAVIS. My understanding is Mr. Grumbles and Mr. Myers are going to testify, and you are going to be our answers on some of the questions; is that right, Doctors? Thank you. Welcome.

STATEMENTS OF BENJAMIN GRUMBLES, ASSISTANT ADMINISTRATOR FOR THE OFFICE OF WATER, ENVIRONMENTAL PROTECTION AGENCY; MARK MYERS, DIRECTOR, U.S. GEOLOGICAL SURVEY; SUSAN HASELTINE, ASSOCIATE DIRECTOR OF BIOLOGY, U.S. BIOLOGICAL SURVEY; AND GREGORY MASSON, CHIEF, BRANCH OF ENVIRONMENTAL CONTAMINANTS, U.S. FISH AND WILDLIFE SERVICE

STATEMENT OF BENJAMIN GRUMBLES

Mr. GRUMBLES. Thank you, Mr. Chairman and all the members of the committee. It's an honor to be here to talk about a most

pressing subject and representing EPA. I am Ben Grumbles, Assistant Administrator for the Office of Water.

Mr. Chairman, I want to assure you that EPA is going to continue to be proactive and protective on this issue. Our mission is to protect the public health and the environment, and specifically, when it comes to water, it's to work together in a collaborative way to rely on the best possible science and to work to make sure that America's waters are clean, safe and secure.

So what I am going to talk about in the testimony, which goes into great detail, but the summaries that I am going to provide to the committee is to focus on the statutory and regulatory framework; also highlight some of the research activities and some specific activities working with our partners at the Federal, State and local level in the Potomac Watershed, part of the greater Chesapeake Bay Watershed.

Mr. Chairman, the first thing I want to mention is that the key to being protective of public health and the environment is to be proactive, and the Clean Water Act is one of the first of several regulatory, statutory tools that we have.

Now, under the Clean Water Act, it's all about keeping the water clean and safe; and, specifically, one of the items under the Clean Water Act we take very seriously is setting water quality criteria, science-based criteria, for aquatic life and also human health.

The agency is proactive on that front. We are establishing new criteria. Just in the last year and a half we established criteria for monophenols and tributyltin based on the end points, the impacts on reproductive developmental systems.

We continue to emphasize in using that tool, the standard-setting tool under the Clean Water Act, the importance of keeping our eyes focused on emerging contaminants such as pharmaceutical and endocrine-disrupting systems.

I also want to highlight the Safe Drinking Water Act, a critically important statute to ensure that both source water protection is carried out and that the product—whether it is the Fairfax Water Authority or the Washington aqueduct, continues to provide drinking water that is clean and safe for this region.

Under the Safe Drinking Water Act, there's several critically important tools that are relevant in the context of this situation. One of them is that the U.S. EPA carries out a 6-year review process. That is a process where at least every 6 years we review existing maximum contaminant level to see if they need to be revised.

I can assure you that as we go through that process, the Agency is very much aware of the increasing evidence, the widespread nature of these endocrine disruptors that are occurring in water systems, and using the tools under that 6-year review process.

Another key tool is the contaminant candidate listing system, where we periodically list new contaminants for regulation under the Safe Drinking Water Act. We are taking very seriously this increasing evidence of endocrine-disruptor chemicals and looking at that CCL process as an opportunity.

The other one is the unregulated contaminant monitoring rule where we require systems to monitor for unregulated contaminants. That is a great opportunity, and we are using that to require increased monitoring for these emerging contaminants.

The other key statutory programs involve FIFRA and the process—of TSCA of reviewing potential new chemicals, and we use that. That's a very important part of the EPA strategy to nip in the bud potential problems and to be preventive and proactive.

The Endocrine Disruptor Screening Program, Mr. Chairman, I am here to tell you that we are working to implement that provision put in the 1996 act, that there are technical challenges, it's cutting-edge science. I am also here to tell you that we will work harder and faster in making more progress on that front.

But I am also here to say that is by no means the only tool that we have in our tool box, and we are using a wide variety of tools to help get the job done and be proactive and protective.

On the research front, research priority for the U.S. EPA is to carry out more field studies and lab work on the causes and effects and occurrence of these endocrine-disrupting chemicals and to develop better technologies so that they can be treated, and the potential for harm is reduced dramatically.

The last thing, Mr. Chairman, I just want to mention is that the key to having a sustainable and successful effort on something as important both locally and nationally as this is to work through a partnership and collaboration. So within the Potomac Watershed, we, with other partners at the State and local level, are part of a source water protection partnership for the Potomac, and obviously one of the priority issues in that context are these emerging contaminants, these pharmaceuticals and other forms of endocrine-disrupting customers. So we look forward to doing a lot more work on that front.

Mr. Chairman, I thank you for your attention and that of all the colleagues on this important subject. I would be happy to answer question when appropriate.

Chairman TOM DAVIS. Thank you very much.

[The prepared statement of Mr. Grumbles follows:]

**TESTIMONY OF
BENJAMIN H. GRUMBLES
ASSISTANT ADMINISTRATOR FOR WATER
ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE
COMMITTEE ON GOVERNMENT REFORM
UNITED STATES HOUSE OF REPRESENTATIVES**

October 4, 2006

Good afternoon and thank you for this opportunity to appear before this Committee. I am Benjamin H. Grumbles, Assistant Administrator for Water at the United States Environmental Protection Agency (EPA). I welcome the opportunity to describe EPA's actions to protect our Nation's watersheds and drinking water supplies against chemicals in our waterways, especially those that may affect the endocrine (or hormone) system. This issue was raised recently in connection with the Potomac River and needs to be considered in the context of our mission of protecting water quality, human and aquatic health, and assuring safe drinking water.

We work within a national framework of protecting human health and the environment, and aquatic research, using technology and implementing regulations on a watershed basis -- all driven by a strong emphasis on sound science, transparency, public information, and partnerships. This framework reflects requirements established by Congress under the Clean Water Act (CWA), the Safe Drinking Water Act (SDWA), the Food Quality Protection Act (FQPA), the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), and the Toxic Substances Control Act (TSCA).

Our mission is to better understand the physiological effects of exposure to water-related contaminants in terms of metabolic pathways, modes of action, and dose response relationships. How do these contaminants work in the body, and what concentrations may cause an effect? For example, the function of the endocrine system and its operation with regard to the production, release, transport, or elimination of natural hormones in the body is essential research -- particularly with regard to the maintenance of normal cell metabolism, reproduction, development, and/or behavior.

When we look at contaminants in water, including chemicals that may affect the endocrine system, we begin by relating what is identified at different locations, concentrations, frequency, time and duration, and then pose the question what human or aquatic life "critical endpoint" may be affected. Critical endpoints that we routinely evaluate include general toxicity (illness and mortality), neurological impacts, immunological effects, as well as reproductive and developmental impacts.

My testimony focuses on three areas – (1) the statutory framework for regulatory and stewardship action; (2) research to increase our understanding of the scope of the problem; and, (3) identify needed solutions.

STATUTORY AND REGULATORY FRAMEWORK

Clean Water Act: Section 304(a)(1) of CWA requires EPA to develop water quality criteria reflecting the latest scientific knowledge related to the kind and extent of effects on human health and aquatic life from the presence of pollutants in our nation's waters. To date, EPA has developed 120 recommended human health criteria and 45 recommended aquatic life criteria for specific chemicals or classes of chemicals. These national recommended water quality criteria (i.e., numeric pollutant concentrations or narrative guidance), serve as the basis for States and Tribes to adopt water quality standards. These standards are used to assess water quality, provide a baseline for non-point source control strategies, and develop discharge limits in CWA permits for industrial and municipal dischargers and municipal wastewater treatment facilities nationally. EPA recently issued two of these chemical criteria that are directly linked to reproductive and developmental impacts – nonylphenols and tributyltins.

When we develop recommended human health and aquatic life criteria, we focus on the most sensitive endpoint, which may be reproductive and developmental effects or others such as immune effects or cancer. It is important to note that if a contaminant has several critical endpoints, protecting for the most sensitive endpoint (which may be something

other than reproductive effects) will also be protective for reproductive and developmental impacts.

Technologies installed to address one class or group of contaminants may also be effective at removing or controlling other contaminants. For example, public water systems that use powdered carbon, ozone, UV, or chlorine to address other treatment needs, may also be removing some level of contaminants with reproductive or developmental effects. The level of removal depends on the technology and the specific contaminant in question. This is an area that EPA continues to examine and research.

Human Health Criteria

In determining human health criteria, EPA evaluates contaminants based on pollutant concentration, potential exposure, and associated human health effects, such as reproductive and developmental endpoints and the relationship among these factors. In addition, EPA evaluates potential exposure routes such as direct ingestion of drinking water and fish/shellfish consumption. To identify chemicals for which EPA will develop recommended human health criteria, EPA works with a broad range of stakeholders to select chemicals with potential health effects that also may occur in water at high concentrations and frequencies, and set priorities for developing national criteria. As new science and data become available, EPA also periodically reviews existing recommended water quality criteria to determine whether any revisions are needed.

Aquatic Life Criteria

In developing recommended aquatic life criteria, EPA uses toxicity data on growth, reproduction, and mortality endpoints found in the literature as well as solicited from the public. The Agency's 1985 Aquatic Life Criteria Guidelines call for a minimum data set comprised of eight different species from eight different families to represent the diversity of organisms, community structures, and populations found in U.S. waters. We consider acute and chronic toxicity data for the most sensitive life stage (e.g., egg, larval, adult), as well as bioconcentration and bioaccumulation studies. The methodology helps assure that the recommended criteria concentration will be protective of aquatic life and

that a scientifically sound process is in place for adjusting the criteria should there be concerns the criteria are over- or under-protective. The method ensures that chemicals causing adverse reproductive effects – regardless of the cause -- have criteria protective of these endpoints.

To better inform our criteria development efforts, we are working nationally to improve understanding of the prevalence in our waters of pharmaceuticals, which include endocrine disrupting chemicals as a subset. We are conducting a pilot study to investigate the occurrence and concentrations of about 40 pharmaceuticals and personal care product in fish tissue. EPA anticipates completing fish sampling and tissue analysis by mid-2007 and producing a report by the end of 2007. This effort is being supplemented by EPA's Great Lakes National Program Office, in partnership with a number of other Federal and local agencies. They are studying the North Shore Channel of the Chicago River to determine if there is reproductive impairment to resident fish and to estimate effluent and stream concentrations of certain chemicals that could cause such impairment.

Safe Drinking Water Act: Using Clean Water Act tools such as water quality criteria and effluent guidelines, EPA and its partners significantly reduce the levels of chemicals entering drinking water plants. Where surface water is used as a public water supply, an additional multi-barrier system of public health protection measures apply to assure that our cities, towns, and communities have clean and safe water to drink. Under the Safe Drinking Water Act and EPA's national drinking water program, the Agency has issued over 200 Public Health Advisories (13 associated with reproductive and developmental endpoints) and established over 85 Maximum Contaminant Level Goals (MCLGs) to date (11 associated with reproductive and developmental endpoints). MCLGs are used in conjunction with information on validated analytical methods, available treatment technologies, and associated costs and benefits to develop enforceable Maximum Contaminant Levels (MCL) or "standards" that apply to approximately 54,000 community water systems that serve over 270 million people across the nation.

In determining whether a contaminant should be regulated, the SDWA directs the Administrator to consider 1) whether a contaminant may have an adverse effect on human health, 2) whether it occurs, or there is a substantial likelihood that it will occur, in public water systems at frequencies and levels of public health concern, and 3) whether regulation of the contaminant presents a meaningful opportunity for health risk reduction for people served by public water systems. To help answer each of these questions, EPA's Office of Research and Development has major national programs devoted to human health effects research, better understanding of exposure issues, analytical methods development, and treatment effectiveness research. EPA's Office of Water has a program to collect monitoring data on unregulated contaminants from a subset of water systems throughout the country.

Applying this research and data to support EPA's ongoing public health protection rulemaking process is important. But equally important is to assure that existing drinking water standards are updated to reflect new science, and that we are looking ahead to identify new contaminants of concern. There are two mechanisms EPA relies upon to keep existing standards up to date, and to identify future contaminants that may warrant more in depth research and possible drinking water regulation.

The first mechanism is the Six Year Review process. Section 1412(b)(9) of SDWA requires that the Agency review existing national primary drinking water regulations every six years and, where appropriate, revise them to reflect new research and information. As a result of EPA's first review of 69 drinking water standards in 2003, we nominated several presently regulated compounds for new health risk assessments due, in part, to new information on reproductive/developmental impacts. We continue to review more recent science and research to identify any new information on reproductive and developmental impacts that may inform our next six year review and regulatory update process.

Looking to the future, EPA also conducts a Contaminant Candidate Listing (CCL) process on a five year cycle to evaluate unregulated drinking water contaminants.

Section 1412(b)(1) of SDWA requires EPA to publish a list of unregulated contaminants that are known or anticipated to occur in public water systems and may require control through national primary drinking water regulation. We have published two CCLs to date and are implementing recommendations made by the National Academy of Sciences and the National Drinking Water Advisory Council to develop a third CCL list. EPA will be sure to include in this evaluation contaminants associated with reproductive and developmental effects.

FIFRA/TSCA: In addition to programs that manage/regulate releases and uses of existing chemicals (chemicals that are being produced today and have been produced and used for many years), EPA also has a robust review process for new chemicals under both the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) and the Toxic Substances Control Act (TSCA). EPA reviews new chemicals and pesticides before they are put on the market and takes appropriate regulatory action to reduce risks or prevent releases in those cases where these new chemicals or pesticides are found to pose unacceptable risks. These review processes are designed to identify problem chemicals and pesticides before widespread production and use and to prevent their introduction into the environment in those cases where risks cannot be effectively mitigated through use restrictions. In both of these programs, EPA's review process includes an evaluation of the likelihood of these new compounds causing reproductive impacts to humans and to fish and wildlife. In this way, EPA is actively working to ensure that new chemicals and new pesticides will not present unacceptable reproductive risks to people or fish and wildlife.

FIFRA/FQPA: The Food Quality Protection Act directed the Agency to develop a screening program, using appropriate validated test systems and other scientifically relevant information, to determine whether pesticides and other chemical substances may have an effect on humans that is similar to an effect produced by naturally occurring estrogen or such other endocrine effect as determined by the Administrator. This was a very tall order, especially considering that when FQPA passed there were no validated test systems available – that is, tests that the scientific community considers reliable and

reproducible for screening endocrine disruptors. To help in this major effort, EPA convened independent panels of experts and other stakeholders, including the Endocrine Disruptor Screening and Testing Advisory Committee (EDSTAC), to examine available tests to determine which ones could be used to set up a reliable screening program. Based on this input, the Agency developed a program that includes a two-tiered system. The first tier will include relatively inexpensive short-term assays designed to identify substances that potentially interact with estrogen, androgen, and/or thyroid systems, followed, if appropriate, by second tier confirmatory testing to determine the effects caused and at what dose level they occur. EPA is working to ensure that the *in vitro* and *in vivo* protocols that comprise the two tiers are optimized and validated so that the information they provide will allow identification of problem substances, and that the assays provide the same results when different laboratories perform them.

A major challenge we are addressing is the apparent need for several different assays to screen for endocrine disrupting effects, as no single assay would cover all hormonal effects of concern. Females and males, for example, have different hormone systems and one assay would not cover both. In addition, a substance could cause hormonal effects by several different mechanisms. No single test is comprehensive enough to provide definitive results in all cases. Therefore, it takes several tests to demonstrate that a substance is not likely to cause harm. We are confident the preparatory work underway at EPA will result in an endocrine disruptor screening program based on sound science and will be reliable and defensible.

EPA continues to use its best efforts to complete validation of these endocrine assays as expeditiously as possible without sacrificing essential scientific quality and integrity. EPA is working closely with the Interagency Coordinating Committee on the Validation of Alternative Methods and the Organization for Economic Cooperation and Development to optimize and validate various endocrine effects test methods to promote international acceptance of these methods.

In the meantime, the Agency is working through existing programs to reduce the risk of exposure to pesticide chemicals that could pose reproductive or developmental risks. Office of Pesticide Programs routinely requires pesticide companies to test food use pesticides to determine if they can cause adverse developmental and reproductive effects. They also evaluate pesticides for a range of potential effects on aquatic life. Tests routinely required include full life cycle studies for fish, early life cycle studies for invertebrates, and developmental and reproductive and developmental toxicity studies for a variety of aquatic organisms. In addition, environmental fate data are required to help determine the likelihood of pesticides moving offsite. All of these data are considered in developing pesticide labels that limit the use of pesticides to reduce their introduction into waterways. In addition, the Agency is required by statute to periodically re-examine its previous safety findings to reflect new data.

RESEARCH

We need the best science available to inform our policies and regulations at the federal and state levels. Research supported by EPA's Office of Research and Development (ORD) is improving our ability to test for endocrine disruptors and increasing our understanding of possible exposure routes and effects these chemicals may have on humans and wildlife. ORD is pursuing a research strategy with three goals: to support the Agency's screening and testing program; to continue providing the underlying science on the effects, exposure, and risk management of endocrine disruptors; and to determine the impact of endocrine disruptors on humans, wildlife and the environment.

To support the Agency's screening and testing needs, ORD is developing screening and testing protocols that OPPTS is having validated to use in implementing the Endocrine Disruptor Screening Program mandated by the Food Quality Protection Act.

ORD is also focusing research on improving our understanding of the underlying science for developing methods, models and measures to help OPPTS, OW and other parts of the Agency integrate data on endocrine disruptors into their risk assessments. This research has focused on:

- identifying chemicals and classes of chemicals that are endocrine disruptors and their modes of action;
- developing methods to evaluate the effects of mixtures of chemicals that interfere with the endocrine system by common and different mechanisms of toxic effects;
- characterizing the shape of the dose-response curves; and
- developing approaches to extrapolate results across species.

Equally important for determining the impact of endocrine disruptors is applying the methods and models ORD and others are developing to assess real-world scenarios. This work includes identifying potential sources of endocrine disruptors in the environment with a focus on wastewater treatment plants, concentrated animal feeding operations, drinking water plants, and biosolids

To ensure we have the best current science on endocrine disruptors, ORD is coordinating research both domestically and internationally. Domestically, EPA is working with other federal agencies through an interagency working group on endocrine disruptors, including jointly sponsoring research with the National Institute of Environmental Health Sciences, the National Cancer Institute, and the National Institute for Occupational Safety and Health to support epidemiological studies investigating reproductive and developmental effects of endocrine disruptors. Internationally, ORD led the working group that prepared the 2002 World Health Organization report on 'Global Assessment of the State of the Science of Endocrine Disruptors; co-sponsors workshops with the European Union and Japan; and serves with other countries on committees under the auspices of the Organization for Economic Cooperation and Development to harmonize testing protocol development.

ACTIONS IN THE POTOMAC WATERSHED

In response to recent fish kills and reports of intersex fish, EPA Region III is working to better understand the source of the problem. For example, the region has arranged for ORD to examine the possible stressors in the Potomac watersheds and whether there is any link to intersex characteristics in fish, with initial findings available in January 2007.

Additionally, EPA's Wheeling, West Virginia Field Office took water samples from the South Branch Potomac watershed to determine potential contaminants using whole effluent toxicity tests. More broadly, EPA III, in partnership with the Maryland Department of the Environment, the Virginia Departments of Health and Environmental Quality, the West Virginia Department of Health and Human Resources, and water utility partners in the Potomac Basin created the Potomac River Source Water Protection Partnership (Potomac River Basin Drinking Water Source Partnership). The Partnership's goal is to use the results of source water assessments to guide the development of strategies to prevent pollution from entering the Potomac River which could threaten drinking water quality. Endocrine disruptors and pharmaceuticals are a priority area for the partnership. The partnership is working together to share data as it is developed on these recent discoveries. But the causes are still unknown.

CONCLUSION

In conclusion, Mr. Chairman, EPA has a strong and responsive statutory and regulatory framework to understand, manage and reduce hazards – including reproductive and developmental effects -- posed by chemicals in our waters. We have a targeted research program to develop new assays to test for and improve our understanding of hazards posed by chemicals. And we are responding to emerging contaminants and hazards, such as those that prompted this hearing, within this framework. However, these issues are not easy ones and often require considerably more information than is available, as well as additional analysis as the reports from the Potomac highlight.

Our goal and commitment is to bring good science, transparency, and strong partnerships to bear to find needed answers and solutions to ensure we continue to meet EPA's central goal of protecting water quality, human and aquatic health, and assuring safe drinking water. I will be happy to answer any questions.

Chairman TOM DAVIS. Mr. Myers, thank you for being with us.

STATEMENT OF MARK MYERS

Mr. MYERS. Thank you, Mr. Chairman and members of the committee, for the opportunity to present the Department of Interior's science regarding the characteristics of the fish in the Potomac River.

But, I would also like to thank you for allowing me to bring some real experts to the subject and hopefully can answer some questions. I will try to keep my comments brief and to the backbone so that you have more time to get to the details you are interested in.

The term intersex or intersexual characteristics describes a range of abnormalities in which both male and female characteristics are present within the same fish. The occurrence of intersexual fish has been related to endocrine disruptors that affect the reproductive system. Endocrine disruptors also interfere with the natural balance of hormones that regulate development, reproduction, metabolism, behavior and the internal state of living organisms.

The presence of this abnormal condition has been used as an indicator to exposure to estrogenic chemicals that have been documented in a variety of wild fish species in rivers and estuaries around the Nation and in other countries.

The USGS has found such fish in the Colorado, the Columbia, Mississippi, Missouri, Rio Grande, Las Vegas Wash and many other locations in the country.

The USGS has studied fish health for many years. Recently the USGS has documented fish and a number of fish health problems in the Chesapeake Bay and its watershed associated with changing water quality and habitat conditions. One of the major findings is the presence of intersexual characteristics in smallmouth and largemouth bass in the Potomac River.

In 2003 and 2004, in response to fish kills and increased observations of external sores and wounds on smallmouth bass and other species, the West Virginia Department of Natural Resources and the USGS began to initiate fish health assessments at selected sites in the Potomac River. In 2005, samplings expanded to additional sites in the Shenandoah and Potomac Watersheds specifically to look at character areas associated with intersexual characteristics.

Preliminary findings suggest that intersex fish are widespread throughout the Potomac and Shenandoah Rivers, but at a much lower incident rate in other rivers in West Virginia.

Potential causes for intersex fish include chemical contamination and changes in temperature regime and habitat. Current research on intersexual characteristics has related numerous endocrine-disruptor chemicals to the reproduction effects in fish. These chemicals include previously banned chemicals such as DDT, chlordane, natural and anthropogenic hormones, herbicides, fungicides, industrial chemicals and an increasing use of chemicals including personal care products and pharmaceuticals.

Potential sources of these endocrine disruptors include human and animal wastes, leachates from landfills, agriculture and individual use of herbicides, pesticides and even atmospheric deposition.

A limited amount of information is available on the distribution of these endocrine disruptors in the Chesapeake Bay and major river basins. During 1992 to 1996, the USGS conducted extensive sampling in the Potomac and Susquehanna River basins. Chlordane, DDT and PCBs were detected in streambed sediments and aquatic tissues in the Potomac basin.

In addition the USGS has taken samples from the Potomac basin as part of several national surveys of chemicals of emerging and environmental concern since 1999, which include endocrine disruptors.

Data from these samples from 1999 and 2000 indicate at least one of these chemicals was found in at least 80 percent of the streams with mixtures of chemicals occurring at 75 percent of the sites.

There is clearly a need to further document the extent of the intersexual characteristics from the Chesapeake Bay and other watersheds. Identifying the chemicals that are impacting the fish, their sources, fate and transport will help managers develop solutions for the problem.

The USDA, in partnership with the Fish and Wildlife Service and other agencies, are conducting studies to discuss some aspects of the Potomac River basin. Field studies—field collections for these studies were completed in mid-June 2006, and all samples are currently being analyzed. The final report of these studies is expected in spring of next year. What we have learned there may be applied to other areas, other watersheds.

In summary, Interior bureaus have been carrying out and will continue field collections and analysis in the Potomac River Watershed. We look forward to continued collaborative efforts with State, Federal and private partners to find better ways to understand impacts of endocrine-disrupting chemicals in the Nation's fish and wildlife resources.

Thank you, Mr. Chairman and members of the committee, for the opportunity to present this testimony. Again, I have with me two real experts on the subject, Dr. Haseltine from my shop and Dr. Masson from the Fish and Wildlife Service. We would be happy to answer any questions.

Chairman TOM DAVIS. Thank you very much.

[The prepared statement of Mr. Myers follows:]

Statement of Mark Myers

**Director
U.S. Geological Survey
Department of the Interior**

Before the

House Committee on Government Reform

**Oversight Hearing on "Ova-Pollution in the Potomac: Egg-Bearing
Male Bass and Implications for Human and Ecological Health"**

October 4, 2006

Introduction

Thank you Mr. Chairman for the opportunity to present testimony on the Department of the Interior's (Department) science regarding intersexual characteristics of fish in the Potomac River. My name is Mark Myers, and I am the Director of the U.S. Geological Survey (USGS).

The USGS is a federal science agency within the Department that conducts research to understand the interrelationships among earth surface processes, ecological and biological systems, and human activities. The USGS does not conduct this science alone. We partner with other federal and state agencies, tribal governments, and non-governmental organizations, including human health agencies or academics, when a comprehensive human health assessment is required.

The USGS has collected data on endocrine disruption in fish and measured concentrations of endocrine disruptor chemicals in many rivers throughout the United States. For 12 years, the USGS has engaged in research activities concerning fish health assessments in the Potomac and Shenandoah Rivers. Fish that possess intersexual characteristics are not limited to the Chesapeake Bay Watershed. The USGS has found such fish in the Mississippi River, the Rio Grande and Colorado Rivers, the Columbia River, the Missouri River, the Las Vegas Wash and many other locations throughout the country.

My testimony today will cover the following:

- The fish health problem in the Chesapeake Bay and other rivers in the Nation;

- The role of USGS and our partners investigating the concerns;
- Current research into the potential causes of intersexual characteristics and endocrine disruption; and
- The role of our sister agency at the Department, the U.S. Fish and Wildlife Service, on this issue.

I will conclude my testimony with a brief discussion of the additional information that is needed to help managers develop solutions for this problem.

Identification of the Issue

In recent years, there have been a number of fish-health problems within the Chesapeake Bay and its watershed that are associated with changing water quality and habitat conditions. One of our major findings is the presence of intersexual characteristics in smallmouth and largemouth bass in the Potomac River.

The term “intersex” or intersexual characteristics describes a range of abnormalities in which both male and female characteristics are present within the same fish. Intersexual characteristics are most commonly described as the presence of female germ cells, which are the precursor to mature eggs, within a male reproductive organ and/or malformed reproductive ducts.

The occurrence of intersex fish has been related to chemicals, often termed endocrine disruptors, that affect the reproductive system. Endocrine disruptors are chemicals that interfere with the natural balance of hormones that regulate development, reproduction, metabolism, behavior, and the internal state of living organisms. Occasionally these abnormalities can be noted externally but most often the main reproductive organs must be examined under a microscope for diagnosis of intersexual characteristics. The presence of this abnormality or intersexual characteristic has been used as an indicator of exposure to estrogenic chemicals and has been documented in a variety of wild fish species in a number of rivers and estuaries around the Nation (*e.g.*, Florida, Colorado, California), as well as other countries, including the United Kingdom, the Seine-Maritime Bay (France), the Mediterranean Sea, and China.

Role of the U.S. Geological Survey

The USGS provides science to help understand the environment, including the factors affecting fish health. The information is used by the U.S. Fish and Wildlife Service (Service), whose role with regard to this issue is

discussed in more detail below; the U.S. Environmental Protection Agency (EPA); and other state and federal partners to better manage and restore fish, wildlife, and their habitats and to protect human health. The risk to humans from fish with intersexual characteristics is currently unknown.

The specific fish-health investigations in the Potomac Watershed that led to the discovery of intersexual characteristics in fish were conducted as part of the USGS efforts on the Chesapeake Bay Watershed. USGS programs and partners, including the Service, the Virginia Departments of Game and Inland Fisheries and Environmental Quality, the Maryland Department of Natural Resources, and the West Virginia Division of Natural Resources (WV DNR), have contributed to this work on fish health issues in the Chesapeake Bay drainage.

Recent Assessments of the Chesapeake Bay Watershed

In 2003 and 2004, in response to fish kills and increased observations of external sores and wounds on smallmouth bass and other species, WV DNR and USGS initiated fish-health assessments at selected sites in the South Branch of the Potomac River. Samples were collected, and pieces of all tissues, including reproductive organs, were removed for evaluation. During this time period, 16 out of 24 sampling events showed more than 25 percent of the male bass possessing intersexual characteristics. Sampling also indicated seasonal differences in the ratio of male bass possessing intersexual characters. Fish sampled in the spring months had a 25-40 percent higher occurrence of intersexual characteristics than those sampled during the summer months.

In 2005, through collaboration among USGS, the Service, the Virginia Departments of Game and Inland Fisheries and Environmental Quality, the Maryland Department of Natural Resources, and the WV DNR, sampling was expanded to additional sites in the Shenandoah and Potomac watersheds for determination of the extent of the intersex problem. During the late summer/early fall of 2005, samples were collected at sites farther downstream in the Potomac, specifically to look at areas associated with intersexual characteristics. These included wastewater treatment outflows; major fish kill sites; and other drainage sites for use as possible background sites. A map of sampling sites is shown in Figure 1.

These preliminary findings suggest that intersexual characteristics in fish are widespread throughout the Potomac and Shenandoah Rivers, but are at a much lower incidence in other sampled rivers in West Virginia.

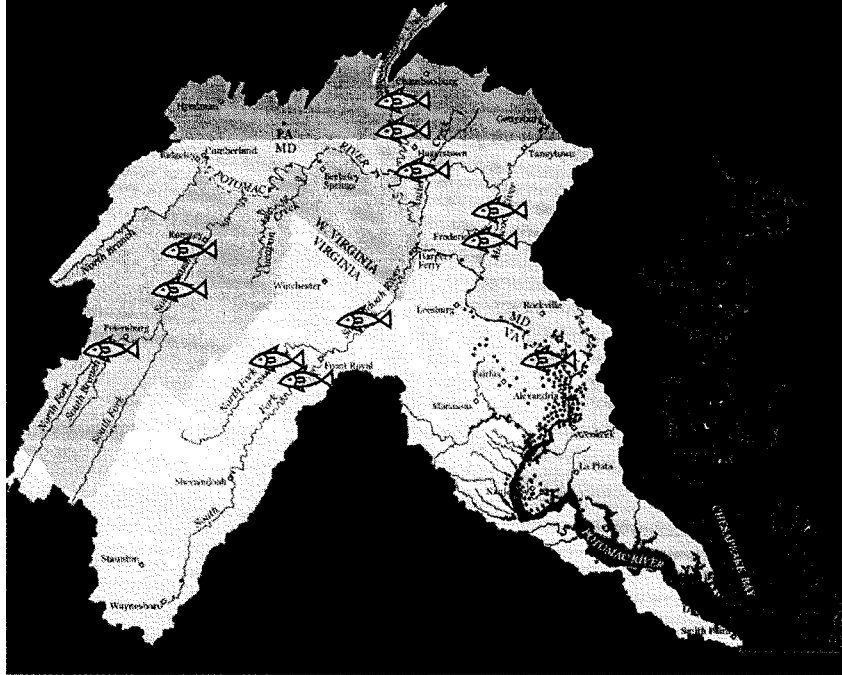


Figure 1. Map of sampling sites for largemouth and smallmouth bass within the Potomac River Watershed. Fish symbols indicate sites at were fish were collected for determination of intersexual characteristics.

Potential Causes

Potential causes of intersexual characteristics in fish include chemical contamination and changes in the temperature regime or habitat. Current research on intersexual characteristics has related numerous chemicals to reproductive effects in fish. These chemicals, often termed "endocrine disruptors," include previously banned chemicals, such as DDT and chlordane, natural and anthropogenic hormones, herbicides, fungicides, industrial chemicals, and an emerging group of chemicals including personal care products and pharmaceuticals that may act as endocrine disruptors in fish as well as other organisms. Potential sources of these endocrine disruptors include agricultural, as well as individual use of herbicides and pesticides, human waste (discharges from wastewater treatment facilities

and individual home septic systems), animal wastes that may reach the aquatic environment through runoff, leachates from landfills, and even atmospheric deposition.

Laboratory studies have indicated that the chronic effects of exposure to low levels of these chemicals can result in negative reproductive effects on zebrafish and fathead minnows. In addition, laboratory studies of fathead minnows, medaka, rainbow trout, common carp and zebrafish have shown other negative effects on reproductive activity by endocrine disruptors. Some results indicate that exposure to environmental contaminants may be affecting both growth and reproductive physiology of individual white sturgeon in the Columbia River. However, we have not been able to conclude from field studies, like the Potomac River study, that endocrine disrupting chemicals have impacts on wild fish populations. In addition, the interactive effects of multiple endocrine disruptors on aquatic organisms are unknown.

A limited amount of information is available on the distribution of these endocrine disruptors in the Chesapeake Bay and its major river basins. During 1992-1996, the USGS conducted extensive sampling of the Potomac and the Susquehanna River Basins. Chlordane, DDT, and PCBs were detected in streambed sediment and aquatic tissues in the Potomac Basin. Sediment from over one half of the sites contained concentrations of these chemicals that posed an intermediate probability of having adverse effects on aquatic life.

In 1999 and 2000, the USGS undertook a nationwide study to provide information on the occurrence of a larger group of chemicals and endocrine disruptors that may be entering the Nation's streams through wastewater. The USGS sampled streams at 139 sites across the Nation, including one site in the Potomac River basin. The samples were analyzed for 95 different emerging contaminants including human and veterinary drugs, hormones, detergents, disinfectants, insecticides, and fire retardants. At least one of these chemicals was found in 80 percent of the streams, with mixtures of the chemicals occurring at 75 percent of the sites. Most common groups detected were steroids, nonprescription drugs and insect repellent. Only 14 of these chemicals have human health advisory criteria and measured levels rarely exceeded any of the standards or criteria. However, little is known about the majority of the chemicals found in the samples or the effects of these chemicals when they are mixed together.

The USGS has also been active in developing methods to measure hormonally active or endocrine disrupting chemicals in water sediment and tissue, as well as in developing integrative samplers such as Semi-

Permeable Membrane Devices (SPMDs) and Polar Organic Chemical Integrative Samplers (POCIS). These new methods are used to assess the environmental occurrence of these chemicals. The USGS has published a significant number of journal articles on the environmental occurrence of endocrine disruptors that provide useful information to researchers in determining the concentrations and mixtures of these chemicals for laboratory studies.

Although the effects of endocrine disruptors can be replicated in the laboratory under controlled conditions using synthetic hormones or other chemicals, it has not been possible to demonstrate a cause of the intersexual characteristics in the field. Laboratory studies that discern the causative mechanisms for endocrine disruption are also underway at several USGS Science Centers. USGS is developing new molecular and other techniques to determine the causative agents of multiple stressor situations.

Research by other scientists around the world has shown that endocrine disrupting chemicals in aquatic environments affect various fauna, from mussels to fish to birds. Some of the aspects of this issue are being addressed by the European Commission and the U.S. Food and Drug Administration to determine the potential risks of human and veterinary drugs on the environment.

Additional Information is Needed

There is a need to further document the extent of intersexual characteristics within the Chesapeake Bay and other watersheds. Identifying the chemicals that are impacting the fish, and their sources, fate, and transport will help managers develop solutions for the problem. The USGS is currently conducting a study to address some aspects of the issue in the Shenandoah Valley of the Potomac River Basin. What is learned there may be applied and expanded to other areas and other watersheds.

To help coordinate federal research activities related to endocrine disruption in the environment, the USGS is leading the planning effort for an interagency workshop in February 2007 at the USGS Headquarters in Reston, Virginia. This workshop is being organized under the Office of Science and Technology Policy and the Council on the Environment and Natural Resources. Eight federal agencies will be participating in this workshop. The major goals are to review the current knowledge about endocrine disruption in the environment, what type of research and studies each agency is currently doing and planning in this area, and most importantly, to develop specific opportunities for collaboration between agencies. The workshop will involve a variety of federal scientists and

managers in every aspect of endocrine disruption, including developing methods to detect Endocrine Disrupting Chemicals (EDC) in the environment; basic research on how they affect fish and wildlife; developing methods for monitoring and identifying sources; and different ways the discharge of EDCs can be minimized or removed from the environment.

Given our current scientific understanding of intersex in fish, the areas in which USGS science can make a valuable contribution include determining:

- What effects these endocrine disruptors have on the ability of fish to reproduce, thrive and sustain populations in the wild;
- What aquatic organisms are being affected (e.g., are only benthic feeders or fish that lay eggs in the sediment affected or are other aquatic organisms at risk), and the implications for the aquatic ecosystem;
- What chemicals and other stressors are implicated in these effects;
- How to improve our ability to predict causes of endocrine disruption in the field;
- The consequences of these effects at the population and ecosystem levels; and
- Potential causes of intersexual characteristics in fish, including chemical contamination, and changes in the temperature regime or habitat.

Role of the U.S. Fish and Wildlife Service

At the request of the Committee, this testimony also provides information developed by the Service concerning the work it is carrying out regarding this issue.

The Service's Environmental Contaminants Program is responsible for protecting the nation's fish and wildlife from environmental contaminants through scientific study, mitigation, education and habitat cleanup. The Service has been involved with studying contaminant effects on fish and wildlife since its earliest days, but the Environmental Contaminants Program (Program) really began to take form in the 1950s, when increasing awareness of pollution problems spurred the American public to demand action.

The Service's Program includes contaminants specialists stationed at more than 75 locations around the country. Service contaminants specialists specialize in detecting toxic chemicals; addressing their effects; preventing harm to fish, wildlife and their habitats; and removing toxic chemicals and restoring habitat when prevention isn't possible. They are experts on oil and chemical spills, pesticides, water quality, hazardous materials disposal and other aspects of pollution biology. The Program's operations are integrated

into all other Service activities and the Service's contaminants specialists often work in partnership with other agencies and organizations which have come to rely on our expertise.

In 1991, the Program began investigating the potential reproductive effects of endocrine disrupting contaminants on wildlife with studies on the endangered Florida panther, polar bears and their prey. To date, the Program has funded and participated in more than 23 studies that specifically looked at the effects of endocrine disrupting contaminants on wildlife across the country. Many of these studies have been directly associated with endangered species recovery actions or threats to the recovery of listed species. These studies typically included management recommendations for the removal of threats from contaminants or other corrective actions to alleviate the impacts of endocrine disrupting contaminants on wildlife.

Some examples of the geographic and taxonomic extent of the studies include: river otters (Oregon); fish, alligators, and panthers (Florida); fish and barn swallows (lower Mississippi River –Louisiana); fish and reptiles (Arizona); fish and wildlife (Nevada); polar bears and eiders (Alaska); sturgeon (middle Mississippi River - Illinois, Missouri, Iowa); mussels and paddlefish (Ohio); common loons (Maine); terns and cormorants (New York); cormorants (Michigan); fish (Delaware, Maryland, Virginia); and amphibians (Texas). All of these investigations involved wildlife and habitat sampling to determine how the wildlife were being exposed to the disruptors and provided suggested management actions to alleviate impacts of endocrine disrupting contaminants on wildlife.

Recently, the Program initiated a campaign with the American Pharmacists Association (APhA) and a myriad of other partners including pharmaceutical manufacturers, the Food and Drug Administration, DEA, Environmental Protection Agency, American Veterinary Association, AMA, PhRMA, Water Environment Federation, U.S. Geological Survey, US Pharmacopeia, Pfizer, Walgreens, AstraZeneca, and the Association of Fish and Wildlife Agencies to develop recommendations and outreach strategies regarding the disposal of unused and unwanted pharmaceuticals. One of the objectives of this campaign is to raise public awareness about disposal options for prescription drugs as a means to minimize the introduction of chemicals into the environment.

Service Involvement on the Potomac River Intersex Study of Bass

As discussed above, the Service's Chesapeake Bay Field Office Contaminants Program participated in a study to assess endocrine disruption in bass at five

locations in the Potomac River Watershed. In coordination with the states of Virginia and Maryland, and including the USGS, the Service selected two sites each on Conococheague Creek and the Monocacy River, Maryland and one on the Potomac River near the Blue Plains wastewater treatment plant, Washington, DC. In 2005, the Service collected data to determine if:

- Sewage treatment plants were releasing detectable concentrations of endocrine disrupting compounds into these water bodies;
- Male bass exposed to endocrine disrupting compounds had altered concentrations of vitellogenin, the protein precursor for egg production; and
- Male bass exposed to endocrine disrupting compounds are exhibiting intersex characteristics.

Today, the Service is working with the USGS to determine if intersex, altered vitellogenin concentrations, or altered hormone ratios can be induced in caged hatchery raised bass deployed in Monocacy River and Conococheague Creek compared to a control group of bass at the National Fish Health Research Laboratory in Kearneysville, West Virginia.

Final chemical analyses and field and laboratory data have not been completed. However, preliminary results indicate that between 80 to 100 percent of the male bass collected in the Monocacy River and Conococheague Creek exhibited intersexual characteristics. More field collections were completed in mid-June 2006 and all samples are currently being analyzed at the laboratory. A final report is expected by Spring 2007.

In sum, Interior bureaus have been carrying out and will continue field collections in the Potomac River watershed. One of our major findings is the presence of intersexual characteristics in smallmouth and largemouth bass in the Potomac River. We do not know the full extent of this phenomenon throughout the entire watershed, as studies to date have been relatively small scale, have involved a single species, and were located near obvious potential sources of endocrine disrupting chemicals. In future years, comprehensive watershed evaluation may be necessary. There is more work to be done, but we are eager to continue our collaborative efforts with federal, state, and private partners to find ways to better understand the impacts of endocrine disrupting chemicals on the Nation's fish and wildlife resources.

Thank you, Mr. Chairman, for the opportunity to present this testimony. I will be pleased to answer questions you and other Members of the Committee might have.

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Chairman TOM DAVIS. Let me start, Mr. Grumbles, with you. EPA has been criticized for the time it has taken for the Endocrine Disruptor Screening Program to get up and running. I think it was established 10 years ago in 1996. It's certainly a long time to be waiting, especially when you consider that the issue is of such importance to human health. It seems that it is several years overdue from the NRDC lawsuit and congressional mandate. Why has it taken so long?

Mr. GRUMBLES. Mr. Chairman, a couple of things. One is this is cutting-edge science, as Congressman Van Hollen mentioned. It's complex. It requires validated assays. That's the concept in the statutory provision, which means not just EPA, but many others involved need to make sure that multiple assays, not one single type of test, but that multiple types of tests, are used, and that they can be produced and reliable.

Mr. Chairman, the solutions are driven by the science. We are committed to making an accelerating process under this program, getting it right so that it is scientifically defensible. So it's been a combination of things.

We are here to tell you that we are going to make significant progress. We are going to be looking to take the first tests under the Tier 1 screening part of the program by the end of next year.

Chairman TOM DAVIS. Do you have enough money for it? Has it been funded appropriately?

Mr. GRUMBLES. I think the challenge has been less of a funding challenge and more a scientific challenge. The Endocrine Disruptor Screening and Testing Advisory Committee spent several years, a good use of time, coming up with recommendations and ideas. There have been some false starts in some of the assays identified, or approaches, but it has really been less of the funding and more of the difficult, complex, scientific issues.

Chairman TOM DAVIS. You know, basically this is a new field of science with no validated test systems. Why couldn't you use existing data or tests?

Mr. GRUMBLES. Well, we are committed to doing a couple of things, using the tools that we have, but continuing to put a priority within the Office of Research and Development on developing new tools, new methodologies and new approaches. So we are fully committed to pushing as best we can, without sacrificing scientific integrity, the development of these validated assays and identifying priority areas and developing implementation procedures.

Chairman TOM DAVIS. Just so we have a better sense, how long should it have taken or should it take, for a new screening program to start producing results from the time Congress requires, to the time it is implemented?

Mr. GRUMBLES. Mr. Chairman, I think from—our objective has been to get it done as quickly as we can in collaboration with the other organizations in the scientific community. So, it's something that we realize—it is one very important tool. We have many other tools that we are using, regulatory tools, to get at those most critical end points using the Safe Water Drinking Act and the Clean Water Act, but we really do see the screening program as an important one.

We are confident now that important discussions have been occurring from the scientific community we will make progress on it.

Chairman TOM DAVIS. Let me switch to Mr. Myers and his team, then I will ask you to answer this, too. I think the question for everybody, we are trying to get a sense of how great the human health concern is of the chemicals in the Potomac Watershed. That's really the underlying question. Do you have any sense of how the results of the test could be extrapolated from fish who spent 100 percent of their lives in the water to humans?

Also, in your written statement, Mr. Myers, you indicated that similar concerns have been raised over polar bears and panthers, which are probably better comparisons to humans than to fish. Is your agency able to shed some light on human health based on these studies?

Mr. MYERS. Mr. Chairman, I will say a few words and then turn it over to the other panel, particularly with the mammals to Dr. Masson.

But the first part of any rigorous scientific analysis is to fully understand, A, the suite of chemicals that are present at the various locations where you see the occurrences. So you need a robust enough water and sediment sampling program. The second part is enough physical evidence in the fish, enough sampling, an adequate sampling over a wide range of conditions. The other component is you want to try to reproduce the same situations that are occurring in the laboratory so you can isolate and demonstrate which chemicals are actually causing this.

Again, we are looking at a wide suite of chemicals here. We are looking at very small concentrations of chemicals, parts per billions or trillions in some cases. This is extremely dilute, which makes it difficult.

Another component is the difficulties—we are dealing with some very fancy manufactured chemical compounds, some of them very small scale. Again, the techniques to develop and detect these things in very small concentrations, the ability to isolate which indicators are happening and which combination of naturally occurring events in the water temperature, turbidity, etc., along with the chemical combination is actually causing the changes.

So, again, it takes a tremendous amount of work and a tremendous amount of—

Chairman TOM DAVIS. What you are saying, it doesn't take much to cause these?

Mr. MYERS. It appears—now, again, the linkage between which chemicals are causing it and the other environmental conditions for each species has to be sorted out.

With that, I will turn it over to, maybe, Dr. Masson to discuss it in the large mammals and on the other species that we are seeing intersexual characteristics.

Mr. MASSON. Thank you, Dr. Myers.

First of all, I appreciate the opportunity to be here, and hopefully some of my testimony will help you.

I am Dr. Greg Masson. This is my area of expertise. I started working on endocrine disruption about 17 years ago in Florida on the alligators and did some work on the Florida panther, so I have a keen interest in the subject matter. With the Fish and Wildlife

Service we also have a keen interest, and we work very well with USGS and EPA on these matters.

As to the contaminants of concern and the potential for endocrine-disrupting effect and the relationship to humans, we obviously deal with the animal components and the effects on the animals, and any interpretation for humans would be left to those agencies to deal with human health.

However, I can elaborate a little bit and say that endocrine systems within vertebrate animals are essentially the same; that we have the same basic hormones as humans, as do cattle, horses, alligators, fish, etc.; so that there are similar systems, and these inferences may or may not be brought by those health agencies.

These are contaminants of concern that generally last a short time, are extremely difficult to measure in the animal systems. And the biomarkers that Mr. Grumbles had been referring to are new techniques and are only advisable and only testable in those animals that can lay eggs generally.

Mammal systems are much more difficult systems to evaluate, obviously, and the bass system is different also.

Chairman TOM DAVIS. Thank you very much.

Mr. Cummings.

Mr. CUMMINGS. Thank you very much.

Dr. Masson, maybe you are the appropriate person to answer this question, just a followup to the chairman's question. First of all, is it OK to eat these fish?

Mr. MASSON. That is an excellent question.

Mr. CUMMINGS. Thank you.

Mr. MASSON. And it is extremely difficult because these compounds are extremely difficult to measure. We have discussed that, and I think the appropriate people that would answer that would be those people within the States that put out the health advisories for the consumption of fish.

But as far as the chemicals concerned and their physical properties, they are not known to bioaccumulate essentially, so they do not generally last a long time.

Mr. CUMMINGS. Let me ask you a different way. If the fish up there was put on a plate and fried and put in front of you, would you eat it?

Mr. MASSON. The bass that is exhibited there?

Mr. CUMMINGS. That one right there.

Mr. MASSON. Without having dissected it and not having looked at the microscopic examination, yes.

Mr. CUMMINGS. You would eat it. The reason why I ask that is because I think we are all concerned. We all understand that this is our watch, and we here, sitting up here, I know you all, too, share the concern that we want to make sure that people live in a safe environment. I look at what just happened with spinach. People all over the country were throwing away spinach just 2 or 3 weeks ago, and probably rightfully so, I mean, because it just set off alarm bells.

I guess what we are just trying to get to is to break it down so that we will have an understanding as to how, as the chairman said, all of this affects the people that we represent. We certainly

are concerned about the ecosystem, and so it seems to me—I don't want us to—I want us to try to get down to the basics.

You know, when we found that there was a problem with spinach, and I am not trying to say that this is any way analogous, but it's the only thing I can think of for the moment, all kinds of alarm bells went off.

I am wondering at what scale, on a scale of 0 to 10, when we see fish that have the characteristics of two sexes, I mean—I mean, a scale of 1 to 10—does some kind of an alarm bell go off? It's been 10 years now, and I understand what you are talking about, how complicated it is. We are talking about chemicals, we are talking about combinations. I am wondering on a scale from 0 to 10, 10 being superalarm, red alert, where does this fall? Can somebody answer that for me?

Mr. GRUMBLES. Congressman, I would like to take a shot at answering your questions. They are excellent questions. I think everybody wants to know is the water safe to drink, are the fish safe to eat?

Based on what we know, the water is safe to drink. After it has been treated by the systems and in compliance with the Safe Drinking Water Act, it's safe to drink the treated water from the Potomac.

The fish, are the fish safe to eat? They should be safe to eat if there's not an advisory, if there's not a local fish advisory warning against eating the fish for some particular contaminant. The question is, though, which we all are acknowledging, this is an emerging area, these endocrine-disruptor chemicals. We really need to learn more.

For me, on a scale of 1 to 10, an 8, in the sense of a need to continue to be proactive; to accelerate more of the science, the studies about not just occurrence and the sources, but the impacts on humans. We don't have a lot of information about impacts, direct threats to humans.

But you are right, fish are sentinels. They are warning signs, and we need to take it all very seriously and be proactive and get more science under our belt.

Mr. CUMMINGS. Let me say this, because my time is running out. Let me just say this: This is my concern. We have an area in Baltimore where people, families grew up, and they later found out that there was a large—a lot of cancer, disproportionate amount of cancer, and now they basically have gotten rid of everybody in that area.

Now, when those people were there, everybody is saying this is a wonderful, a swell place to live. I don't want us looking back 10 years from now saying that we did not move with the appropriate urgency, and then people have gotten cancer. I can imagine a woman looking at this hearing right now possibly saying to herself, if she is thinking about having a family, a husband and wife saying, well, wait a minute now, wait a minute, if that's what it is doing to fish, then how does that affect me and my children yet unborn?

Those are basic quality-of-life issues that I think we all have a duty to try to protect the people who we are working for. I guess

that's what I am trying to get it at, Mr. Chairman. Any of you may want to comment on that briefly?

Thank you, Mr. Chairman.

Chairman TOM DAVIS. Thank you.

Would you like to say anything.

Mr. MYERS. Congressman, we take the issue very seriously. We will do whatever we can to support in the scientific community. I think a couple of—there are multiple levels of issue here. The first is how is the ecosystem itself being affected, how is this affecting the stability and the population of the fish, and then how does that work up the food chain to the other parts of the community, including the humans?

So if you start out, one of the difficulties in this problem is that we are seeing very low concentrations of something that is very persistent and not coming off a single point source. We are looking at multiple different types of chemicals. We are looking at a very complex relationship between the chemicals. Again, they don't accumulate, so it is not like heavy metals or something that accumulates in increasing amounts in the soil; they are just there in a low-level, continuous way, multiple chemicals, multiple sources, very hard thing to regulate.

Again, it's a wide suite of chemicals. So, again, we are trying to get basic knowledge on this. It's not just in the Potomac, but whether we have documented it in many other watersheds as well. So it is a nationwide issue. We are struggling with it. Again, hopefully, through some good science, we can help start to answer your questions.

Chairman TOM DAVIS. Thank you very much.

Mr. Gilcrest.

Mr. GILCREST. Thank you, Mr. Chairman.

Yesterday at the dock at Turner's Creek, I bought eight eels, pretty large-size eels, 2½ feet long, pretty thick, for \$20, which is a pretty good price for the amount of meat I was getting.

That is indicative of up and down the Chesapeake Bay. People go to hundreds of places around their community—a waterman comes in with catfish or perch or rockfish or oysters or whatever, and someone at the dock purchases it, or it goes to market.

So I think the sense of urgency, to wrap this up and have some understanding of whether or not you are going to eat that fish on your plate or be concerned about eating that fish on that plate, whether it has mercury contamination, persistent toxic chemicals, I think we really need to get moving on the Endocrine Disruptor Screening Program as quickly as possible.

The questions I have, the source of these complex chemicals, I guess, would cover the gamut of sewage, industrial, air deposition, agriculture, stormwater runoff, any of those. They are all potential sources in the sewage—is it sewage alone, or is it chemicals mixed with the sewage as it gets processed?

Mr. GRUMBLES. Congressman, a couple of things. One is you are absolutely right. There's a wide array of different sources. Our research and development office is developing a brand-new information system to be able to track and identify, do some real detective work on the possible causes.

Mr. GILCREST. So the question about sewage, and I know—

Mr. GRUMBLES. We have evidence that outfalls at sewage treatment plants—that there are endocrine-disruptor chemicals or that there are pharmaceuticals. It's a combination.

Mr. GILCHREST. So those endocrine disruptors, in the sewage in particular, it's been mentioned here a couple of times, they are short-lived. Are there any endocrine disruptors that are persistent, that would be considered persistent toxic chemicals, and what might they be?

Ms. HASELTINE. There are persistent endocrine disruptors, but there are many more that are not persistent, and I must say that in some of them, once they get into the biota, we don't really know that much about how long they persist, because they tend to be modified so much and conjugated. That is one of the reasons that EPA is having such a hard time with this screening process.

Mr. GILCHREST. Can you give me an example of what some of the persistent endocrine disruptors are?

Ms. HASELTINE. There are traditional organochlorine pesticides that we deal with all the time, and also many of the anthropogenic hormones that we use in veterinary.

Mr. GILCHREST. How do they actually disrupt the endocrine system? You have these very various persistent chemicals. You have short-lived chemicals. When they get into the fish or the alligator or the panther or the polar bear because of their exposure, is it molecule to molecule? Does the chemical molecule mimic the natural endocrine molecule; is that how it works?

Ms. HASELTINE. There are a couple of theorized delivery mechanisms. The most researched is that they adhere to the receptors that we all have in our bodies for these hormones, so they mimic what natural hormones would do.

Mr. GILCHREST. So if a molecule can mimic the natural hormone, is there a level or a degree of exposure that could affect the endocrine system in a fish versus a human?

Ms. HASELTINE. There are some laboratory results which go to that issue, but there is not enough information for me to give you a definitive answer on that.

Mr. GILCHREST. Is there a timeframe where a definitive answer might be understood?

Ms. HASELTINE. I think all I could say to you is we are working as hard as we can to come up with these. You know, one of our challenges is that we would like to be able to look at mixtures of these chemicals, because that is what we are finding in the environment, and that makes our job harder.

Mr. GILCHREST. Is that what has happened in the Everglades or the Great Lakes or some of these other areas you have described used as a benchmark to see what the short-lived chemicals are, what are the persistent chemicals, to have some clear understanding of the amount of exposure a fish needs or a mammal needs?

Ms. HASELTINE. I would say that we are still at the stage where we are looking at the general distribution and the environment. We don't have a handle on that system adequately. Perhaps EPA has more information.

Mr. GRUMBLES. No, that's true. It's one reason why this area is a priority for the agency in getting more information and research. Your questions are good ones.

I just wanted to emphasize something. You were talking about the fish, and EPA works very closely with FDA, whether it's commercially sold fish, which is more of the FDA prerogative or area of expertise and jurisdiction, or a recreationally caught fish.

Fish are such an important part of the diet and balanced diet, and there are so many benefits. One of the important aspects of this hearing and getting out more information is identifying what information do we have, to what extent are there health risks?

We don't have a lot of information that these intersex fish are presenting a problem or a risk to humans. When we find—and are finding—or USGS is throughout the country—incidences where there are endocrine-disrupting chemicals or traces of pharmaceuticals, we are not finding high amounts of it, so it's not directly translating in and a threat to human health. But it is a real warning sign, and that's why it is helping to define the research agenda and the pace of the research.

Mr. GILCREST. Thank you very much. I also would wish with your partnership that you are talking about, local, State and Federal, that you have a strong partnership with the Corps of Engineers Enforcement Division for protecting forestlands and wetlands. That's some of the sources of these problems.

Thank you, Mr. Chairman.

Chairman TOM DAVIS. Mr. Moran.

Mr. MORAN. Thank you, Chairman Davis.

Well, Dr. Masson, first I want to ask you about a book that I read many years ago, it's just coming back to mind now. It was touted at the time as kind of a followup to Silent Spring. It was a book about endocrine disruptors. What was the title and the name of the author?

Mr. MASSON. I presume you are talking about the book written by Theo Coburn on chemically induced alterations in animals in 1992?

Mr. MORAN. No, it had a much sexier title than that.

Mr. MASSON. There was another one called Earth in the Balance?

Mr. MORAN. No, the one by Theo Coburn. I was just trying to remember the title—Our Stolen Future. Thank you.

Mr. MASSON. Yes, the more recent book, I am sorry.

Mr. MORAN. I asked a lot of people about that in EPA and the like, and they almost to a person dismissed it, saying that she was exaggerating, that she was finding individual situations that didn't have much relevance to the larger picture and so on. Looking back on that, it must have been at least 10 or 12 years, has much of what she said been borne out to have both relevance and accuracy today?

Mr. MASSON. With hindsight being 20/20, there are some accuracies that she has, and there are some parts of her book that obviously were fictional, and it can be interpreted in that manner. But as Mr. Grumbles said, on a scale of 1 to 10, using animals as his sentinel for all of our concern for the human and the American people, you know, a 7 is appropriate, that this is a concern for them. And some of the scenarios that she had depicted in her book, Our Stolen Future, can be explained, just like a lot of the quotes from Nostradamus can be explained in that regard, but, you know, enough that they can be corroborated.

Mr. MORAN. Mr. Grumbles, we have had our run-ins before, interior appropriations on water issues, but I find you to be a professional, and I have been impressed by you.

I have to say, though, that I am not impressed by the Environmental Protection Agency. It just seems that overall, that Agency looks for every excuse it can find to delay implementation of regulations designed to protect the public health.

This is another case in point. I don't blame you because you weren't around in 1996, but this was 10 years ago. As the chairman has pointed out, EPA was instructed to make recommendations on how to develop a screening and testing program for endocrine disruptors. That was timely, it was important, it should have been done.

Two years later, there was a notice outlining the program. Then a year later it said that there was a scientific advisory panel review; 1999 you settled—EPA settled with the Natural Resources Defense Council, agreeing to use its best effort to complete validation and so on. In 2000, there was a progress report which couldn't have outlined any progress.

So this is a bipartisan condemnation of EPA, at least in terms of the endocrine disruptors program. That might be somewhat heartening.

But, boy, in the last 5 years, there's been even less action. There was a validation subcommittee formed in 2001. There was a report to Congress in 2002 on progress, of which there really was none. Then there was, in December 2002, a notice on proposed chemical selection for the initial round of screening; and, then, again, there was another notice in September 2005 on chemical selection approach for initial screening. There has not been one chemical screened, as far as I can see.

Now, can you tell me, any chemicals that have gone through this screening process as was instructed to you?

Mr. GRUMBLES. Congressman, I respectfully disagree with your opinion.

I can tell you that the Agency is being as proactive and protective as we can. The science needs to drive the solutions, and when it comes to the screening program, as I said, we are working to accelerate the pace of that program.

Now, I can say there has been progress. We have worked, we have set up the two-tier system. We are not just dismissing, Congressman, when you mentioned the dismissing concerns, far from dismissing concerns about various types of chemicals.

The Agency has embraced the notion that it needs to focus on more than just estrogen and on more than just pesticides; that it needs to focus more on human impacts, but also ecological. We are committed to work with you and with others to get more results and to do it more quickly.

Mr. MORAN. I mean, those are nice words, Mr. Grumbles, and those are kind of the words that we got in response to similar questions. But in this Washington Post article that brought this to light, it said that even though in 1996 Congress required EPA to develop a screening program to identify which chemicals are endocrine disruptors, 10 years later the Agency hasn't tested a single chemical. Is there one chemical you have tested?

Mr. GRUMBLES. Under that program that is being developed, no. And we will, by the end of next year, once we get the protocols right. But under other authorities, Congressman, we had been very proactive and aggressive, and we will continue to be, and we will look for new opportunities for some of the tools that I have mentioned, the Safe Drinking Water Act, the contaminant candidate listing process for new and emerging chemicals.

I can give you many instances, and I would be happy to submit it for the record, where the professionals at EPA, and the research office, as well as in the pesticides and the water offices, are being proactive. We have studies under way to identify the occurrence of pharmaceuticals and the causes and effects.

So I would disagree with the characterization, respectfully, and say this is an emerging area, there's cutting-edge science that is required, and we are committed to working with our other Federal and non-Federal partners to give this important subject significant attention.

Mr. MORAN. Fortunately for you my time is up, Mr. Grumbles.

Chairman TOM DAVIS. Mr. Van Hollen.

Mr. VAN HOLLEN. Thank you, Mr. Chairman, and again, thank you all for your testimony.

Mr. Grumbles, you mentioned in your testimony that the fish were kind of like sentinels, and I think other people said that they're like canaries in the coal mine, so I think when we begin to see these disturbing effects in the fish, we really need to take a more urgent look at it, and I think you understand that, and just to piggy-back a little on that, the other half of that is the urgency with which the science is pursued and the amount of effort and time, and I guess I would just ask whether or not the EPA has yet identified the list of chemicals that it intends to test.

Mr. GRUMBLES. I know that we've got some priority. We've got a—very much part of our work plan and agenda is to identify priority chemicals/pharmaceuticals. We have identified priorities, under our Research Office Program, specific pharmaceuticals and endocrine disruptors, and in terms of the screening program, that's very much a part of the protocols and the tiering process that we're going to use.

Mr. VAN HOLLEN. OK. Could you provide the committee with a list of the—

Mr. GRUMBLES. I'd be happy to provide you with the materials that we've got. Yes, sir.

Mr. VAN HOLLEN. Good. Is atrazine on that list?

Mr. GRUMBLES. I don't know the answer.

We do have—to answer your question on atrazine, which is a chemical that is coming up quite a bit in the discussions over endocrine disruptors, we do have a standard for that. The Agency has established a standard criterion for atrazine under the Clean Water Act as a regulatory tool.

Mr. VAN HOLLEN. Right, but I want to ask you. Is that one of the tests, one of the validating tests, you're looking at for atrazine? Let me ask you about that.

As I understand, the test is 3 parts per billion; is that correct? That's the current test? That's the water quality test for atrazine?

Mr. GRUMBLES. Three parts per billion?

Mr. VAN HOLLEN. That's my understanding. Is that accurate?

Mr. GRUMBLES. Do we know—I think—can we confirm that for you and provide it?

Mr. VAN HOLLEN. Yeah. The reason I ask that is—look, the European Union has taken a look at some of these issues and pesticides, and they've decided that they are dangerous to the human health. In fact, the European Union has banned atrazine. Now atrazine has been found recently in the Potomac River waters. I have here the Washington Aqueduct, the U.S. Army Corps of Engineers' analysis from 2005. Last April, they found the atrazine level to be 0.5 parts per billion, which is under the EPA standard, but the question is whether or not the EPA standard is adequate, because my understanding is that—research tests that have been performed, once that unfolds, show that you can have a significant negative impact at 0.1 parts per billion. Are you familiar with that research?

Mr. GRUMBLES. Personally, I'm not. I am familiar with the work that the Pesticides Office is doing to regulate atrazine, and identify, with the Research Office.

Mr. VAN HOLLEN. I guess the question is—there have been a couple studies. There were studies on humans, actually, in 2003 and 2006 on atrazine which actually showed that there was a significant impact on men exposed to atrazine at lower levels than the current standard, and so I guess my question is here's something where the European Union has already said, look, we think this is dangerous enough to the public health that we're going to ban it. So it would seem to me that we would be taking a really hard and urgent look at this, and my question is, given the fact that it has been found in the Potomac River and other rivers in the country, what are you doing to followup on both the tests that were on animals and on humans that show that the 0.3 part-per-billion test was not sufficient to protect the human health, and from the perspective of the Europeans, they said we're not even—we're not going to mess with this. Let's just not allow it.

Mr. GRUMBLES. A couple comments, Congressman.

I'm going to need to get back to you on some of the specific things because I can't describe each and every one, and need to coordinate with staff on that, and will be happy to provide that to you and the other committee members.

The other thing, though, is the basic point about pesticides. I know that the Agency recognizes—and certainly, the Research Office—our research priorities are focused very much on pesticides and synthetic hormones, and pesticides is one of the priority areas.

I also know that we are coordinating on an international front, providing information and also sharing, learning lessons and also giving lessons about different approaches on this cutting-edge science, and pesticides is very much an important part of it; so are some of the other—the pharmaceuticals and various endocrine disruptor chemicals.

One of our messages, Congressman, is we are going to pursue aggressively regulatory tools and research, and stewardship is one item, and one of the messages that we are providing to homeowners and to citizens is that the toilet is not a trash can, and as more and more pharmaceuticals are in the marketplace and are

being disposed of, you need to think twice before you flush it down the toilet, and that is not advisable, that there needs to be other ways to manage with these pharmaceuticals as we learn more about their impacts on the environment and potentially on human health.

Mr. VAN HOLLEN. Right. Do we look—Mr. Grumbles, do we look carefully at the decisions made by the Europeans and learn from the studies and conclusions they've drawn? I guess my question is pretty simple here.

I mean are the Europeans wrong to ban it or are they more protective of human health?

Mr. GRUMBLES. I don't know. I can't speak to the merits of banning or not banning on that. I know that inclusivity and sharing with other jurisdictions is important. We know about the U.K. and their pilot studies on endocrine disruptors, and we will continue to work to see—to learn more and also to share our knowledge.

Mr. VAN HOLLEN. Thank you.

Thank you, Mr. Chairman.

Chairman TOM DAVIS. Thank you.

Just two quick followups. EPA testing isn't just limited to the screening program, though, right?

Mr. GRUMBLES. That's correct.

Chairman TOM DAVIS. So it's fair to say the EPA is doing nothing?

Mr. GRUMBLES. No, that's not fair to say.

Chairman TOM DAVIS. OK. OK. Talk about the screening program. Talk about the other things you're doing.

Mr. GRUMBLES. Well, I can speak to several.

Particularly as Congressman Gilchrest mentioned in raising very valid questions about sewage in the mixtures and components of sewage, one of the actions that the Agency is taking is a national pilot study of pharmaceuticals and personal care products in fish tissue, also a targeted national sewage sludge survey to obtain national estimates of source concentrations for about 50 chemicals. We're also doing a monitoring study of 30 emerging contaminants as well as 60 conventional pollutants discharged from sewage treatment plants. We've had sampling at four sites, and more sites will be selected, and we're really working with the utilities because they are in the front lines on this front when it comes to doing studies about the occurrence, and also our Research Office is providing funding for technologies to more effectively treat and remove the pharmaceuticals or other types of endocrine-disrupting chemicals at the utility itself.

Chairman TOM DAVIS. OK. Any more questions?

Mr. GILCHREST. One quick one, Mr. Chairman.

Is there any connection or potential connection between this Endocrine Disruptor Program, all of the screening that's being done and a broader look at TMDLs?

Mr. GRUMBLES. "TMDLs" are Total Maximum Daily Loads that the Congressman is very much aware of because it's essentially a term in the Clean Water Act for developing a pollution budget for waterways that are not meeting their water quality standards and where more needs to be done and more action needs to be taken.

I think it's very useful to connect the dots between emerging contaminants and also the tools that we use and our State partners use in accelerating the restoration of impaired waterways. A lot of the TMDLs that have been developed to date—and it's well over 20,000 TMDLs across the country—have dealt with the conventional pollutants, but there are certainly an emerging number that deal with the toxic pollutants that are persistent and bioaccumulative ones, and as we gather more information on the scientific front about pharmaceuticals or other types of endocrine-disrupting chemicals, we are going to be providing that information and integrating it into the State Clean Water Act regulatory programs, and the TMDL is a perfect way to identify an action plan to reduce loadings that are causing the impairment.

Mr. GILCHREST. Thank you, and a lot of these issues dealing with persistent toxic chemicals affecting the ecological systems that we all rely upon, sometimes there's international arrangements or international protocols or international collaboration on this research.

Is there any of that with this?

Mr. GRUMBLES. Yes, sir, and I'm—I will also commit to provide more information to the committee from our Office of Research and Development and our International Affairs Office about the international collaborations. I think this is a—this is not just a local matter. As USGS and others have indicated, there is a growing number of sites where these types of intersex fish problems are being noticed. We are detecting endocrine-disrupting chemicals and pharmaceuticals, for example, and it's not limited to the United States. It's in other parts of the world, and that's a key part of the strategy is to gather more information and to share it globally.

Mr. GILCHREST. Thank you.

Thank you, Mr. Chairman.

Chairman TOM DAVIS. Thank you very much.

Mr. Van Hollen.

Mr. VAN HOLLEN. Yeah, just a quick question because this is obviously a big area.

My understanding is there are about 87,000 different chemicals in commercial use, and I guess the question I would have for you is do you have any idea how many or what percentage of those chemicals find their way into the drinking water, No. 1, and No. 2, how many of those do we test for, and that's why I'm curious as to, you know, whether you've put together a list and how you've prioritized, because there are so many chemicals out there that we're clearly not testing for. We need to come up with, you know, a rational way of deciding how we're going to go about this and try and obviously cover as many as possible.

So do you have any idea, of the approximately 87,000 chemicals that are commercially produced, how many, percentage, find themselves into the waterway, No. 1, and No. 2, how many do we test for?

Mr. GRUMBLES. Well, your point about prioritizing and having targeted research and prioritizing the chemicals, we are focusing on the endocrine programs on this issue on pesticides and also on high production volume chemicals.

When it comes to the Safe Drinking Water Act and the regulatory program, as you know, Congressman, we rely very much on the unregulated contaminant monitoring rules where we have—we're working on a third rule regulation that identifies specific unregulated contaminants for monitoring by utilities.

I'm very excited about the future of the contaminant candidate listing program under the Safe Drinking Water Act because that is a mechanism where we do the best we can to identify out of those thousands of chemicals, unregulated chemicals, which ones present the greatest health risk, which ones have the greatest degree of occurrence, which ones will present the most meaningful opportunity for reducing risk to human health.

So that process will continue. I don't have a specific number for you, Congressman, you know, in comparison to the 87,000, but we are going to be using and will continue to use a screening process to identify priority chemicals for regulation under the Safe Drinking Water Act.

Mr. VAN HOLLEN. OK. Thank you.

Chairman TOM DAVIS. Mr. Moran, do you want to—

Mr. MORAN. Thank you, Mr. Chairman.

I want to congratulate Dr. Myers on his confirmation by the Senate. Congratulations, and it's nice to see Dr. Haseltine here with us as well.

We cited the study that you had done, Dr. Myers, and you've submitted it as written testimony. Is there other histological evidence of these endocrine disruptors being present in streams in the area?

Mr. MYERS. Thank you for that question, Congressman.

I know I've made the studies—we've put some of the references in the testimony, but I will defer to Dr. Haseltine, who can talk about maybe a few of the key studies that have gone on.

Ms. HASELTINE. As I understood your question, you wanted to know the number of studies that have been done in this one—

Mr. MORAN. No, just other—we focused on the one that the doctor cited in the testimony from Dr. Myers. Are there others corroborating that?

Ms. HASELTINE. Yes. There are endocrine disruption studies that we're carrying out and have carried out all over the country with various species of fish, and from the Mississippi drainage to the Colorado, we are looking at this—for this phenomenon and at this phenomenon in association with water quality and other environmental changes.

Mr. MORAN. No. I understand you're looking at it, but there were some pretty startling discoveries in the Potomac, for example. There weren't smallmouth bass, so you looked at largemouth bass, and you found that 70 percent of them or something had eggs in them. So this was a pretty widespread phenomenon among the bass.

Has that been corroborated by other studies that haven't been mentioned in this, particularly in this immediate area?

Ms. HASELTINE. No. I would not say that it has at those levels, but I think we need to be cautious in interpreting that because this study that showed those high incidences was looking specifically below sewage outfalls, and most of our studies more generally sample fish in the environment. So, while, you know, obviously this

needs followup, I would say that the sampling design would lead to more—

Mr. MORAN. But the initial conclusion would be that it's coming from the sewage. They live in the—

Ms. HASELTINE. There certainly is a correlation.

Mr. MORAN. There is a high correlation, and when they are swimming in the area that is immediately impacted by the sewage outflow, there—the endocrine disruptors cause them to be what we call “intersex fish,” and that was 70 percent of them, apparently, in the one—in this immediate area, the Potomac. OK.

Well, that's probably a good segue to the next panel, Mr. Chairman.

Chairman TOM DAVIS. Thank you.

Let me just ask one last question. This has been mostly upstream in the West Virginia area and less downstream; is that right? Have we sampled fish downstream as well?

Ms. HASELTINE. I think we're just starting to sample fish further downstream, and you have some of the initial results.

Chairman TOM DAVIS. OK. Thank you.

Mr. VAN HOLLEN. Mr. Chairman, I thought I saw something about the presence of this problem around the Woodrow Wilson Bridge. Was I wrong about that or did—I thought I saw a report about that.

Ms. HASELTINE. Yeah, that was one of the sites. Right.

Mr. VAN HOLLEN. Thank you.

Chairman TOM DAVIS. OK. This is obviously an important issue, not only for D.C. and the Potomac, so we're going to followup with your progress on the screening program and the work of all of the Federal agencies to reduce these risks to human and wildlife health.

So I'm going to thank this panel, and we'll discharge you, and we'll take about a 3-minute recess as we move to our next panel. Thank you all very much.

[Recess.]

Chairman TOM DAVIS. The committee will come back in. I want to thank you all for staying with us.

We have on the second panel Mr. Charles Murray, the general manager of the Fairfax Water. Thank you for being here. Mr. Andrew Brunhart, the general manager of Washington Suburban Sanitary Commission. Thank you. Mr. Thomas Jacobus, general manager of the Washington Aqueduct. Thank you for being with us. Mr. Joseph Hoffman, the executive director of the Interstate Commission on the Potomac River Basin. Thank you. Mr. Ed Merrifield, executive director with the Potomac Riverkeepers, and Mr. Erik Olson, the director of the Advocacy for the Natural Resources Defense Council. I know you're no stranger to this committee.

I want to thank all of you for being here. You know it's our policy we swear you in before you testify. So, if you would, just rise with me.

[Witnesses sworn.]

Chairman TOM DAVIS. You've all heard the first panel. Your entire statements are in the record. We'll give you 5 minutes to kind of sum up or say whatever you'd like to say, and then we'll move to questions.

Mr. Murray, we'll start with you. Thank you, and Fairfax Water for all the great things you're doing. Thanks.

STATEMENTS OF CHARLES MURRAY, GENERAL MANAGER, FAIRFAX WATER; ANDREW D. BRUNHART, WASHINGTON SUBURBAN SANITARY COMMISSION; THOMAS JACOBUS, GENERAL MANAGER, WASHINGTON AQUEDUCT; JOSEPH HOFFMAN, EXECUTIVE DIRECTOR, INTERSTATE COMMISSION ON THE POTOMAC RIVER BASIN; ED MERRIFIELD, EXECUTIVE DIRECTOR/RIVERKEEPER, POTOMAC RIVERKEEPER, INC.; AND ERIK OLSON, DIRECTOR OF ADVOCACY, NATURAL RESOURCES DEFENSE COUNCIL

STATEMENT OF CHARLES MURRAY

Mr. MURRAY. Thank you, Mr. Chairman and members of the committee. Thank you for the opportunity to present comments at this important hearing. My name is Charles M. Murray, and I am the general manager of Fairfax Water, Virginia's largest drinking water utility.

Fairfax Water is a nonprofit public water authority governed by a 10-member citizen board of directors who are appointed by the Fairfax County Board of Supervisors. Fairfax Water provides retail or wholesale service to nearly 1.5 million people in the northern Virginia communities of Fairfax, Loudoun and Prince William Counties, the city of Alexandria, the town of Herndon, Fort Belvoir, and Dulles Airport. Fairfax Water operates state-of-the-art water treatment plants on both the Potomac and Occoquan Rivers.

As a large drinking water utility, we are regulated under the Safe Drinking Water Act through the Environmental Protection Agency. As with all community water utilities, Fairfax Water is dependent upon the U.S. Environmental Protection Agency [EPA], to set standards protective of public health through the resources provided by Congress and the Safe Drinking Water Act. In Virginia, the Virginia Department of Health has been delegated regulatory authority for drinking water utilities. I'm proud to report to you that Fairfax Water meets all Federal and State drinking water regulations, and has never had a violation of any maximum contaminant level. In fact, Fairfax Water takes pride in not only meeting these regulations but in surpassing regulatory requirements for producing top-quality and aesthetically pleasing water.

You've asked me today to address my awareness and concern regarding a recent USGS study and a subsequent article in the Washington Post discussing egg-bearing male bass fish found in the Potomac River. Unfortunately, the USGS has not yet shared the report referred to in the Post article, so I cannot comment on it. What I can speak to are three things: My personal philosophy on the profession of drinking water treatment, Fairfax Water's activities in the National Capital Region to protect the Potomac River Watershed, and Fairfax Water's participation in advancing the science associated with understanding endocrine disruptors.

Mr. Chairman and members of the committee, you're dedicated to serving the people of the United States in the best way possible. We at Fairfax Water are similarly committed to serving our customers. A statement that hangs on my office wall, written by a

former executive director of the American Water Works Association, captures the importance of our work, and I'd like to share it with you now.

"We are, all of us, water beings on a water planet. Water is life. Without it, all living things die. Our dependence on water is absolute; our psyches know this and signal us in myriad ways of water's elemental importance and significance. That is why we love the water and remember experiences associated with it. Of the earth's vast resources of water only a small fraction is fresh and drinkable. A few people among the globe's billions have been charged with the task of ensuring everyone else has a reliable supply of safe water. Supplying potable water is an essential human activity, a great responsibility, and a vocation of distinction," and those words were written by Jack Mannion.

As you can see, with this philosophy in mind, it's with a sense of responsibility and commitment that I and the people of Fairfax Water perform our duties as the major northern Virginia drinking water provider.

To that end, Fairfax Water is a founding partner—or a founding member of the Potomac River Source Water Protection Partnership that Mr. Grumbles referred to earlier. The Partnership is a voluntary organization of water utilities, State, interstate, and Federal partners whose representatives are dedicated to source water protection. The Partnership has identified endocrine-disrupting compounds [EDCs], as a priority issue, and the Partnership is following the latest research into which specific chemicals may be causing the endocrine-disrupting effects on fish in the Potomac River.

The short-term goals include defining and prioritizing EDCs based on a review of current knowledge and consultation with experts, assessing potential sources of EDCs in the Potomac River and identifying appropriate, best-management practices for their control. The long-term goal is to enhance local understanding of EDC identity, sources, distribution, possible human and ecological health effects, management practices to limit their presence in the environment, and methods of treatment and removal.

In addition to the Potomac Partnership, Fairfax Water, along with many water utilities across the Nation, contributes to and participates in the activities of the American Water Works Association Research Foundation [AwwaRF]. AwwaRF is a member-supported, nonprofit organization that sponsors research to enable water utilities, public health agencies and other professionals to provide safe and affordable drinking water to consumers. AwwaRF is the research arm of the drinking water supply community. I serve on the Board of Trustees for the Foundation, and my utility, Fairfax Water, is a longtime investor in AwwaRF as are most of the water agencies in the greater D.C. area. AwwaRF operates a \$30 million-a-year drinking water research program, and to date, AwwaRF has conducted 21 projects totaling about \$5 million to specifically study the issue of endocrine disruptors. It is this research that will ultimately help lead us to understand the significance of endocrine disruptors in the aquatic environment.

Finally, Mr. Chairman, I'd like to close by noting that AwwaRF is once again seeking funding from the U.S. Congress. AwwaRF is

80 percent funded by local drinking water utilities and research partnerships and 20 percent through the funding assistance from Congress, and I want to express my strong support for the \$5 million AwwaRF funding request in the EPA Science and Technology account of the fiscal year 2007 Interior Appropriations bill.

Thank you, Mr. Chairman. I'd be happy to answer any questions.
[The prepared statement of Mr. Murray follows:]

**Congress of the United States
House of Representatives
Committee on Government Reform
Hearing on “Ova-Pollution in the Potomac: Egg-Bearing Male Bass and Implications for
Human and Ecological Health”
1 p.m., October 4, 2006**

Testimony of Charles M. Murray, General Manager, Fairfax Water

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J.B. Mannion

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Finally, Mr. Chairman, I would like to close by noting that AwwaRF is once again seeking funding from the United States Congress. AwwaRF is 80% funded by local drinking-water utilities and research partnerships and 20% through funding assistance from Congress. I want to express my strong support for the \$5 million AwwaRF funding request in the EPA Science and Technology account of the FY'07 Interior Appropriations bill.

Thank you. I will be happy to answer your questions.

Chairman TOM DAVIS. Thank you very much.
Mr. Brunhart.

STATEMENT OF ANDREW D. BRUNHART

Mr. BRUNHART. Thank you, sir. Chairman Davis and members of the committee, thank you for inviting me to appear today as well as we come together to discuss a shared problem worthy of attention.

I am Andrew Brunhart, general manager of the Washington Suburban Sanitary Commission. I am also honored today to represent over 1,400 employees who are dedicated to provide safe, clean water to our communities in an environmentally and fiscally responsible manner. Now, this is just not a lofty statement for us that we dole out at annual meetings; this is our mission, and it drives the work we do day in and day out.

Departing from my script a little bit, in my discussion with you today I think and I trust you will feel the passion amongst the three general managers at the table today, and you will find our remarks, independently prepared, remarkably similar. I have submitted a longer statement and attachments for the record, and I just want to sum up a few key points for you today.

We are here today to talk about a very specific topic, ova pollution in the Potomac, but I believe the topic is part of a larger discussion that requires leadership at all levels of government and industry to resolve. What is the value of water in our society, and what legacy are we leaving our children in our rivers, streams, bays, and oceans?

Being in the business of providing safe, clean water and treating what our communities send down the drains, I think about this question daily. I think about the existing science and technology we currently use to provide a service. Many in this country take that service for granted. The 20th century innovators ensured that most Americans can turn on the tap and receive clean water on demand. This is an achievement we should be proud of, and at WSSC, we have been an integral part of that legacy. Beginning with one of our founders, Abel Wolman, who is widely known as the father of modern sanitary engineering, WSSC employees have set standards that many around the world aspire to. We are committed to providing the best possible product to our 1.6 million citizens throughout Prince George's and Montgomery County, MD. Throughout our history of over 80 years, WSSC has never had a water quality violation. We consistently meet and exceed all drinking water standards.

Yet we are not content with our past achievements. WSSC, working with our peers around the Nation and the world, look toward continuous improvements in science, technology, investments, research, and business practices to get better at what we do. As Mr. Murray mentioned, American Water Works Research Association and Foundation is very important to us in our industry, and WSSC is a founding member. We have contributed over \$1.5 million to AwwaRF since 1983.

In an ongoing effort to address this problem, the Chair of WSSC and I met with Congressman Van Hollen, gosh, almost a year ago, to discuss EDCs and the potential impact on human health. I

would like to take this opportunity on the record to thank Congressman Van Hollen for his steadfast commitment to the environment and to his constituents. Thank you, sir.

WSSC did not create this situation, but I assure you we are as committed as this committee and every panelist here today to work with all interested stakeholders to resolve it. Of course, government has and continues to play a critical role in the legacy we leave our children through a consistent commitment through leadership, focus and funding. That is why we are here today, to find solutions.

Congress should play an important role, in addressing the required scientific research, but you should be wary of simply creating additional regulations to patch a problem. I believe the EPA possesses the necessary statutory authority and regulations to address this problem. What the EPA has been lacking is consistent funding from the Congress, and I'm mindful of the honorable representative from the EPA's comments earlier on funding. With this introduction and going quickly now, I would like to offer two suggestions I believe to be constructive, and urge the committee to consider them for possible action.

First, a watershed restoration and congressional caucus should be created at the inception of the 110th Congress to serve as a real working group for all stakeholders. This group should include Members of Congress from across the Nation, water utilities and associations, environmental groups, agricultural groups, corporations, developers, pharmaceuticals, EPA, the Corps of Engineers, USGS, and the State governments. Congressional leadership will provide the focus in briefings, legislation development, funding considerations, and education. The goal should be to push the science and research forward to get us ahead of this curve rather than behind it.

Second, Congress should restore funding to both the EPA's State and Tribal Assistance Grant Program [STAG] Program, and previous AwwaRF appropriations. Restored funding is critical to proactively address the science and research requirements to protect our water supply.

While the EDC issue is a concern for water utilities, it is a major environmental issue worthy of serious national attention. We should ask ourselves the questions again. What is the value of water in our society, and what legacy are we leaving our children in our rivers, streams, bays, and oceans? I am fully confident that with continuous funding commitments from Congress and the EPA, along with investments made by industry leaders such as WSSC, we can push the science to understand this situation better. It is important that we create a forum like a congressional caucus where Members of Congress and their staffs and stakeholders can work through this issue together as you consider various policy options that have direct and indirect effects on EDCs in our waterways.

Thank you, Mr. Chairman and the committee, for the opportunity.

[The prepared statement of Mr. Brunhart follows:]

Testimony of
Andrew D. Brunhart, General Manager
Washington Suburban Sanitary Commission
House Committee on Government Reform
October 4, 2006

Introduction

Chairman Davis, Ranking Member Waxman and Members of the Committee, thank you for inviting me to appear today as we come together to discuss a shared problem worthy of attention. I am Andrew Brunhart, General Manager for the Washington Suburban Sanitary Commission and I am honored to represent our 1,424 employees dedicated to providing safe, clean water to our communities in an environmentally and fiscally responsible manner. That is not just a lofty statement that we bring out at our annual meetings. That is our mission and it drives the work we do day in and day out.

We are here today to talk about a very specific topic: Ova Pollution in the Potomac. But I believe this topic is part of a larger discussion that requires leadership from all levels of government and industry to resolve. What is the value of water in our society and what legacy are we leaving our children in our rivers, streams, bays, and oceans? Being in the business of providing clean, safe water and treating what our communities send down the drains, I think about this question daily. I think about the existing science and technology we currently use to provide a service many in this country take for granted. The 20th Century innovators ensured that most Americans can turn on a tap and receive clean water on demand. This is an achievement we should be proud of and the WSSC has been an integral part of that legacy.

WSSC was founded in 1918 by great pioneers and innovators in the water industry. One of the people who worked on the original surveys that led to the creation of the Commission was the world-renown engineer, Abel Wolman. Wolman is widely known as the father of modern sanitary engineering. Among his many contributions, perhaps most significant was his development of chlorination - which made possible the adoption of simple, effective methods to curb waterborne diseases (typhoid and cholera, most notably). Since that time, WSSC employees have set standards that many around the world aspire to. We are committed to providing the best product possible to our 1.6 million customers throughout Prince George's and Montgomery Counties in Maryland. Throughout our entire history, WSSC has never had a water quality violation. We consistently meet or exceed all drinking water standards and we are very proud of that achievement.

Yet we are not content with our past achievements. The WSSC, working with our peers around the nation and the world, looks toward continuous improvements in science,

technology, investments, research, and business practices to get better at what we do. One example is our commitment to the American Water Works Association Research Foundation (AwwaRF). The WSSC is a founding member of AwwaRF and continues to play a proactive role within this member-supported, international, nonprofit organization that sponsors research to enable water utilities, public health agencies, and other professionals to provide safe and affordable drinking water to consumers. In addition to proactive participation in the AwwaRF decision making and research review processes, the WSSC contributed over \$1.5 million to AwwaRF since 1983 to further their research efforts and scientific explanations. (See Attachment A)

That is why, I believe, we are here today. As an industry leader in providing safe, clean water and treating wastewater for our communities, the WSSC is equally as concerned as this Committee and all of your panelists about the reports of male smallmouth bass in the Potomac watershed found to be bearing eggs. This is not a new concern for the WSSC or for me personally. It was about this time last year that the Chair of WSSC and I met with Congressman Van Hollen to discuss EDCs and the potential impact on human health. I would like to take this opportunity on the record to thank Congressman Van Hollen for his steadfast commitment to both the environment and his constituents.

The WSSC did not create this situation, but I assure you, we are as committed as this Committee and every panelist here today to working with all interested stakeholders to resolve it.

EDC Background

As this is not a new concern for the WSSC, I would like to provide some of the facts we have gathered over time. (See Attachment B for details) Emotive speculation makes great headlines, but I believe we must step back and allow the science to drive us forward. While this is a problem that must be recognized and agreed upon as a national priority, the problem definition and eventual solutions must be based in and driven by science.

Recent studies of fish health in several sub-watersheds of the upper Potomac River were initiated by the US Geological Survey (USGS) as a result of lesions, parasites and die-offs, unexpectedly identified reproductive abnormalities (e.g., feminization of male fish or “intersex” condition). USGS researchers concluded that the fish have been affected by some type of environmental contaminant that apparently disrupted or modified the fish endocrine system (i.e., glands and hormones that control growth and development) as well as potentially weakening their immune systems. Similar findings have been reported in other areas of the United States. In fact, USGS conducted similar studies in 139 streams in 30 states and found 80 percent of those streams faced similar problems to those we face in the Potomac Watershed. The potential effects of endocrine disruption are worldwide and the wildlife serves as the sentinels. (SOURCE: Dr. Vicki Blazer, USGS, presentation at DWSP Partnership sponsored Workshop, September 2005.)

State of the Science – Virtually concurrent with the fish studies, USGS released findings of a national reconnaissance of stream water quality, which identified almost ubiquitous presence at very low concentrations (i.e., sub-parts per billion or parts per trillion) of dozens of organic wastewater compounds, including pesticides, industrial and household products chemicals such as plasticizers and flame retardants, detergents, antimicrobials, non-prescription drugs, prescription pharmaceuticals, natural and synthetic hormones and fragrances. A sub-set of these chemicals is known to have endocrine disrupting effects on fish, based on controlled laboratory studies. (SOURCE: Kolpin *et al.* (2002) *Environmental Science & Technology*, vol. 36, no. 6, pp.1202-1211.)

Major advances have been made in analytical detection methods, which allowed the chemicals to be identified in the environment at ultra-low concentrations. This advancement is not in harmony with our scientific understanding of chemicals impacts on human health which causes confusion. Thus, there is a great need for scientific advancing. While occurrence of some chemicals in our streams and observed impacts on fish indicate that we face a significant environmental issue (for fish and wildlife), there is no reliable research that indicates occurrence of similar impacts in the human. Human exposures to chemicals are not similar to fish exposure which live in water for their entire life and are subject to bioaccumulation and bioaugmentation of toxic chemicals. The scientific focus of regulators has been on toxicity of pesticides (e.g., cancer and birth defects); whereas, a new effort is now being given to “sub-chronic” (i.e., low-dose) and non-fatal abnormal effects outcomes such as endocrine disruption. The practice of extrapolating laboratory observations of animal toxicity and adverse effects to human health effects is not yet adequately developed for endocrine disrupting chemicals (EDCs).

The USGS has extended its occurrence studies of micro-contaminants in ground water, sediments and drinking water (intake raw waters). (SOURCE: Dana Kolpin, USGS, presentation at DWSP Partnership sponsored Workshop, September 2005.) Both the Potomac and Patuxent water plant intakes were tested once each in 2002, and traces at the part-per-billion level of herbicides, household products constituents (flame retardant and detergent) and common drugs (e.g., caffeine and a nicotine byproduct) were found. Fewer than 1/3 of the substances detected are suspected fish EDCs. No regulated human health maximum contaminant levels (MCLs) were violated. (SOURCE: Ingrid Verstraeten, USGS in email to Plato Chen, WSSC.) Sources of micro-contaminants appear to include both point sources (e.g., wastewater treatment plant effluent, industrial effluents, and confined animal feeding operations) and non-point sources (e.g., storm water runoff from urban and agricultural land). Meanwhile, the drinking water industry has sponsored more than a dozen studies of EDCs, including their treatability under conventional water treatment processes and by advanced technology processes. (SOURCE: Kim Linton, AwwaRF, presentation at DWSP Partnership sponsored Workshop, September 2005.) Conventional processes such as sedimentation and chlorination (i.e., disinfection) have been proven to remove or degrade many of the trace substances, and advanced oxidation (e.g., ozone), absorption by activated carbon and nano-filtration/reverse-osmosis have been demonstrated to significantly reduce contaminant concentrations in finished drinking water. (SOURCE: Snyder *et al.* (2003) *Environmental Engineering Science*, vol. 20, no. 5, pp. 449-469.)

Challenge for Utilities – The ubiquitous occurrence of ultra-low concentration industrial and pharmaceutical contaminants in surface waters and drinking source waters is a national level concern that cannot be addressed adequately in a piecemeal manner by individual water utilities. In the case of surface water supplies drawn from a large watershed such as the Potomac River, an individual utility does not have jurisdiction over the multiple states and land uses in the headwaters. Accordingly, the research, funding and grants, guidelines and policy must be coordinated and sponsored at the national level. Government agencies can play a direct part in this (e.g., EPA, USGS, USDA, FDA) along with nationally influential independent or trade research agencies (e.g., NRC/NSF, AWWA-RF) and universities. Utilities can contribute limited funding and expertise to these efforts.

Despite the national nature of this challenge, water utilities including WSSC have been proactive. They support and fund advanced research via AwwaRF and are pursuing source water protection. WSSC also uses advanced wastewater treatment in all of its plants. Given the national nature of this concern and its complexity requires leadership and funding from the government and other key stakeholders. In the long run, implementation of pollution prevention and source control best management practices offers the fairest approach to reduce impacts to drinking water supplies. National level partnerships with the chemical, pharmaceutical and agricultural industries may be a starting point.

Realities in Water Utility Industry

Water utilities are often targets when situations like this arise. Although the water WSSC provides to our customers consistently meets or exceeds all standards set for clean drinking water, ours is not always a clean business. We must treat everything that literally goes down the drains. Whether flushing household cleaning products, expired prescription medications, garbage, oils, or a host of other items that common sense tells us should not be in our water, water utilities like the WSSC are expected to treat the wastewater collected by our systems.

While our record is exemplary, we realize we are not perfect. Any endeavor involving human beings will experience mistakes. Yet, we have taken every precaution possible to train our employees; invest in and upgrade our infrastructure; and contribute to ongoing science, research and development for continued improvement in every aspect of our business lines.

The water business is one of gravity. We are continually challenged by what comes down the drains and downstream. Contributing to the treatment challenges are those upstream that send their runoff our way.

Role Government Can Play

Government has and can continue to play a critical role in the legacy we leave our children through a consistent commitment for leadership, focus, and funding. Neither the WSSC nor any other utilities testifying today created this situation and none of us can

solve this problem alone. Congress should play a significant role in addressing the required scientific research, but you should be wary of simply creating additional regulation to patch the problem. I believe EPA possesses the necessary statutory authority and regulations to address this problem. What the EPA has been lacking is consistent funding commitments from Congress.

I would like to offer two suggestions I believe to be constructive and urge this Committee to consider them for possible action.

First, a Watershed Restoration Congressional Caucus should be created at the inception of the 110th Congress to serve as a real working group for all stakeholders. This group should include Members of Congress from across the nation, water utilities and associations, environmental groups, agricultural groups, corporations, developers, pharmaceuticals, EPA, Army Corps of Engineers, USGS, and state governments. Congressional leadership would provide the focus in briefings, legislation development, funding considerations, and education. The goal should be to push the science and research forward to keep us ahead of the curve. It would be a forum where solutions could be approached in a comprehensive, proactive way that would allow for input on Congressional authorizing and appropriating language, as well as regulations and grant programs.

Second, Congress should restore funding to both the EPA's State and Tribal Assistance Grant (STAG) program and previous AwwaRF appropriations. STAG grants have been declining for the past decade. Restored funding is critical to proactively address the science and research requirements to protect our water supply. In addition, AwwaRF has also seen a steady decline in federal commitments to its research efforts, placing heavier burdens on the approximately 900 drinking water utilities and other members that today provide more than 80% of the \$30 million annual budget. Congress must reaffirm its commitment to this national research organization as it works to answer our national drinking water and environmental questions. (See Attachments C and D)

Summary

While this issue is of concern for water utilities, it is a major environmental issue worthy of serious national attention. We should ask ourselves the question again: What is the value of water in our society and what legacy are we leaving our children in our rivers, streams, bays, and oceans?

I am fully confident that with continuous funding commitments from Congress and the EPA along with investments made by industry leaders like WSSC, we can push the science to understand this situation better. It is important that we create a forum like a Congressional Caucus where Members of Congress, their staff, and stakeholders can work through issues together as you consider various policy options that have direct and indirect effects on EDCs in our waterways.

At WSSC, we take the concerns of our customers very seriously and we respect their opinions on this issue. Our goal is to provide clean water to our families today while

ensuring our legacy of clean water for our children and their children. Most of us at WSSC are not just employees but customers as well. We drink WSSC water too and we want it to be just as safe for our families as those around us. We look forward to working with this Committee, your colleagues throughout Congress, the EPA, our peers, environmental groups, and other industry stakeholders to continue exceeding safe water standards for our communities and those across America.

Thank you Mr. Chairman and I look forward to answering any questions you or the Committee might have.

ATTACHMENT A

American Water Works Association Research Foundation (AwwaRF)

Background on AwwaRF

The Awwa Research Foundation (AwwaRF) is a member-supported, international, nonprofit organization that sponsors research to enable water utilities, public health agencies, and other professionals to provide safe and affordable drinking water to consumers. Its mission is advancing the science of water to improve the quality of life.

AwwaRF works to achieve the mission in three ways:

- By sponsoring research. AwwaRF sponsors an anticipatory and scientifically credible research program that is responsive to the needs of the water supply community.
- By developing knowledge. AwwaRF identifies the practical benefits of research findings and delivers this knowledge to stakeholders throughout the water supply community.
- By promoting collaboration. AwwaRF cultivates partnerships with organizations around the world to leverage funding and share expertise.

The Foundation was established in 1966 to provide a centralized, practical research program for the drinking water community. Its research program, which is highly respected as being one of the most scientifically credible and best-coordinated in the world, focuses on four main goal areas: high-quality water; efficient and customer-responsive organization; infrastructure reliability; and environmental leadership. Specific research projects focus on treatment, distribution, resources, monitoring and analysis, management, and health effects.

The Foundation is comprised of, and largely funded by, member organizations that voluntarily subscribe in order to support and benefit from the water-related research that the Foundation sponsors. Close to 900 water utilities worldwide currently subscribe to the Foundation. In addition, more than 50 water-related consulting firms and manufacturing companies are subscribers. The majority of our subscribers are in the United States. Others are located in Canada, Australia, and Europe. Our collaborating partners are situated all over the globe.

Since its inception, the Foundation has sponsored more than \$370 million in research, represented by more than 600 completed research projects. Subscribers provide more than \$10 million annually to fund research. This money is supplemented each year by several million dollars allocated by the U.S. government and is leveraged through collaborative partnerships with other research organizations.

In addition to monetary support, the high level of research activity sponsored by the Foundation would not be possible without the efforts of more than 700 subscriber

volunteers who serve on committees and councils, providing expertise in a variety of research topic areas.

Subscribers steer the Foundation in almost every respect. The Foundation is governed by an elected board of trustees, most of whom are water utility managers. The board also includes representatives appointed by the Association of Metropolitan Water Agencies, the National Association of Water Companies, and the American Water Works Association, as well as three members elected from the Foundation's subscriber base.

The research agenda is developed in consultation with subscribers, drinking water community experts, working professionals, and technical advisory groups. Hundreds of suggestions are examined to identify high-priority projects most crucial to the drinking water community. The final research agenda is then approved by the board of trustees.

Each approved project is assigned an advisory committee of volunteer experts in a specific area of study. The advisory committees evaluate proposals, select contractors, and monitor projects through to completion.

A full-time staff of more than 40 employees serves as the coordinating group for the various research functions. Staff includes professionals with expertise in biological sciences, chemistry, engineering, management, and communications.

Summary of On-going and Completed Research Sponsored by AwwaRF

Completed/Published Projects

1. Endocrine Disruptors and Pharmaceuticals in Drinking Water #2598
Examines potential implications of endocrine disruptors and pharmaceutically active compounds in drinking water and wastewater. Provides an overview of the health effects, occurrence, potential treatment options, and mainly the research agenda for future years. Research partners: WERF and WRF. Published in 2001.
2. Assessment of Waters for Estrogenic Activity #2642
Modifies, validates, and utilizes in vitro screening tests for the presence of estrogenic compounds in water samples. Also performs in vivo tests in combination with in vitro tests to determine the significance of the presence of estrogenic compounds in source waters, finished drinking waters, and effluent streams. Published in 2003.
3. Risk Communication for Emerging Contaminants #2776
Develops, tests, and evaluates proactive strategies and tools for utilities to identify and track emerging drinking water contaminants (e.g., endocrine disruptors, pharmaceuticals, MTBE [methyl tertiary-butyl ether], radon, etc.). Also provides strategies and tools for utilities to proactively and effectively communicate information to the public about the emerging contaminants. Published in 2004.
4. Occurrence Survey of Pharmaceutically Active Compounds #2617
Investigates the occurrence of a limited number of pharmaceutically active compounds in source and treated waters. Uses findings to further define and prioritize future research on

the occurrence, treatment, and potential public health impacts of pharmaceutically active compounds in water. Research partner: WRF. Published in 2005.

On-Going Research

1. Toxicological Relevance of Endocrine Disruptors and Pharmaceuticals in Drinking Water #3085
Will conduct an extensive literature review on the known toxicity of EDCs and pharmaceuticals including naturally occurring EDCs and pharmaceutically active compounds. Will analyze various raw and finished drinking waters for a suite of EDCs and pharmaceuticals, and will screen various bottled waters, beverages, and food products. Will also use an in vitro bioassay to assess the estrogenicity of various waters, beverages, and foods. Will conduct risk assessments for chemicals of interest based on findings. Tailored Collaboration partner: Southern Nevada Water Authority.
2. Evaluation of Conventional and Advanced Treatment Processes to Remove Endocrine Disruptors and Pharmaceutically Active Compounds #2758
Will determine removal efficiencies of conventional and advanced treatment processes for compounds classified as endocrine-disrupting chemicals (EDCs) and pharmaceutically active compounds (PhACs). Will ultimately predict contaminant removal a priori by a given treatment process or set of treatment processes.
3. Evaluation of Triclosan Reactivity in Chlorinated and Monochloraminated Waters #2902
Will study the reaction of triclosan, a commonly used anti-microbial agent in personal care products, with free chlorine and monochloramine. Will characterize the kinetics, mechanism, and products of interactions, evaluate the influence of water quality on the reaction rates, and develop mechanistic models that describe the reactions occurring.
4. Toxicological Relevance of Endocrine Disruptors and Pharmaceuticals in Drinking Water #3085
Will conduct an extensive literature review on the known toxicity of EDCs and pharmaceuticals including naturally occurring EDCs and pharmaceutically active compounds. Will analyze various raw and finished drinking waters for a suite of EDCs and pharmaceuticals, and will screen various bottled waters, beverages, and food products. Will also use an in vitro bioassay to assess the estrogenicity of various waters, beverages, and foods. Will conduct risk assessments for chemicals of interest based on findings. Tailored Collaboration partner: Southern Nevada Water Authority.
5. Removal and Fate of EDCs and Pharmaceuticals in Bank Filtration Systems #3136
Project update not available. Partnership with Water Technology Center, funded in 2005, completion date TBD.

6. Pharmaceuticals, Personal Care Products and Endocrine Disruptors--Occurrence, Fate and Transport in the Great Lakes Water Supplies and the Effect of Advanced Treatment Processes on Their Removal #3071
Will investigate the occurrence and fate of selected EDCs/PPCPs in surface water, and their removal by conventional ozonation and advanced oxidation treatment processes. Will examine the concentrations of target compounds before and after various treatment processes and as a function of pertinent parameters including ozone dose, hydrogen peroxide dose, pH, alkalinity, total organic carbon, turbidity, and temperature. Tailored Collaboration partner: Windsor Utilities Commission.
7. Impact of UV and UV - Advanced Oxidation Processes on Toxicity of Endocrine-Disrupting Compounds in Water #2897
Will assess, through the use of bioassays and chemical analyses, the degradation, by-product formation, and subsequent toxicity of endocrine-disrupting compounds following UV and UV-oxidation treatment of water.
8. Comprehensive Utility Guide for Endocrine Disruptors and Pharmaceuticals In Drinking Water #3033
Will synthesize existing knowledge on endocrine disrupting compounds (EDCs), pharmaceutically active compounds (PhACs), and personal care products (PCPs) in drinking water supplies. Will also include what is known about health effects, analysis, occurrence, and behavior in drinking water treatment processes for this broad range of compounds.
9. Pharmaceuticals, Personal Care Products and Endocrine Disruptors--Occurrence, Fate and Transport in the Great Lakes Water Supplies and the Effect of Advanced Treatment Processes on Their Removal #3071
Will investigate the occurrence and fate of selected EDCs/PPCPs in surface water, and their removal by conventional ozonation and advanced oxidation treatment processes. Will examine the concentrations of target compounds before and after various treatment processes and as a function of pertinent parameters including ozone dose, hydrogen peroxide dose, pH, alkalinity, total organic carbon, turbidity, and temperature. Tailored Collaboration partner: Windsor Utilities Commission.
10. Toxicological Relevance of Endocrine Disruptors and Pharmaceuticals in Drinking Water #3085
Will conduct an extensive literature review on the known toxicity of EDCs and pharmaceuticals including naturally occurring EDCs and pharmaceutically active compounds. Will analyze various raw and finished drinking waters for a suite of EDCs and pharmaceuticals, and will screen various bottled waters, beverages, and food products. Will also use an in vitro bioassay to assess the estrogenicity of various waters, beverages, and foods. Will conduct risk assessments for chemicals of interest based on findings. Tailored Collaboration partner: Southern Nevada Water Authority.
11. Evaluation of Triclosan Reactivity in Chlorinated and Monochloraminated Waters #2902

Will study the reaction of triclosan, a commonly used anti-microbial agent in personal care products, with free chlorine and monochloramine. Will characterize the kinetics, mechanism, and products of interactions, evaluate the influence of water quality on the reaction rates, and develop mechanistic models that describe the reactions occurring.

12. Evaluation of Conventional and Advanced Treatment Processes to Remove Endocrine Disruptors and Pharmaceutically Active Compounds #2758
Will determine removal efficiencies of conventional and advanced treatment processes for compounds classified as endocrine-disrupting chemicals (EDCs) and pharmaceutically active compounds (PhACs). Will ultimately predict contaminant removal a priori by a given treatment process or set of treatment processes.

ATTACHMENT B

**Briefing on Endocrine Disrupting Chemicals (EDCs)
WSSC White Paper****Background and Challenges****1-Background**

Development and body functions of many organisms are directed by a regulatory system called the endocrine system. The system includes a center in the brain (hypothalamus) and numerous glands. The glands produce compounds (hormones) at several locations in the body and distribute them via the blood stream as chemical messengers to regulate the actions of tissues located in other parts of the body. The hypothalamus constantly monitors the hormone levels in the blood. If levels of a hormone get too high or too low, the hypothalamus sends signals to the gland that produces this hormone to gear up, slow down, or shut off to keep the 50 trillion cells in our body fully coordinated. Endocrine Disrupting Chemicals (EDCs), mostly man-made, are those which could interfere with this regulatory function because they may either mimic or suppress the action of the body's natural hormones. Because these chemicals are increasingly present in the environment as a result of human activities and they only require tiny amounts to disrupt endocrine functions, EDCs may have major impacts on ecology and perhaps human health.

The U.S. EPA has defined EDCs as "Exogenous chemical substances or mixtures that alters the structure or function(s) of the endocrine system and causes adverse effects at the level of the organism, its progeny, population, or subpopulation of organisms, based on scientific principles, data, weight-of-evidence, and precautionary principle." Pharmaceutically Active Compounds (PhACs) (e.g., prescription drugs) and Personal Care Products (PCPs) (e.g., pain medication) may also impact the endocrine system and are generally considered as EDCs, although sometimes they are considered as separate groups.

The EDCs impact animals and humans mainly by interfering with the functions of this complex control system that operates at the cellular level. As an example, EDCs can damage the glands that produce hormones or may mimic the natural hormones produced by the gland and mislead the target organs to misperform. Some EDCs lodge in hormone receptor cells and block the activity of natural hormones. This can produce "Hormonal Chaos" in the body, with major impacts on an organism's functions.

Examples of EDCs include DDT and alachlor (pesticides/herbicides used in agriculture), metals such as cadmium and lead (used in commercial/industrial applications), plasticizers (used in toys and most plastic products), and polynuclear aromatic hydrocarbons (associated with oil spills and storm runoff). The number of known EDCs is quite limited; however, the potential number of EDCs may be very high as more than 87,000 untested man-made chemicals are currently on the market.

2- EDCs as Another Challenge to Human Health

Bacteria, viruses, mutagenic chemicals, and radiation are well known environmental agents with potential for causing human diseases. A good number of scientists have postulated that EDCs are a new class of environmental agent and could be a cause of major human disabilities and malfunctions. This phenomenon came to light when the intergenerational health effects of the synthetic estrogen diethylstilbestrol (DES), a hormone administered to women for treatment of menopause and prevention of spontaneous abortion, were observed. The use of DES was approved by the Food and Drug Administration in 1941. It was found to cause cancer in experimental animals in 1959. In 1971, an association was found between mothers who took DES and a rare form of vaginal cancer in their daughters. The FDA warned physicians against the use of DES in 1972, thirty-one years after its introduction in the market. As another example, in the 60s, it was learned that wildlife exposure to chlorinated pesticides caused major reduction in their reproductive capabilities. Sex organ changes in fish, such as those observed in the Potomac River, are more recent examples of the impact.

EDCs have two unique features, which distinguish them from other agents. First, they do not appear to exhibit conventional toxicological dose-response characteristics. In contrast to conventional contaminants, they may cause significant problems at very low levels. As an illustration of how low these levels may be the human lifetime exposure to an EDC at 100 parts per trillion via water supply, assuming 70 years of life and drinking two liters of water per day, amounts to only 0.005 gram (less than 1/6 of a drop of water). Second, EDCs are also very powerful during the early stage of life, but their impacts may have a long lag time, which may not be observable in the offspring until, after they reach adulthood.

The biological plausibility of EDC impacts based on observations on wildlife and on test animals in research laboratories appear to be quite strong, but uncertainty exists regarding their health effects in humans. A 2002 study sponsored by the World Health Organization states: "Generally, studies examining EDC-induced effects in humans have yielded inconsistent and inconclusive results, which are responsible for the overall data being classified as "weak". This classification is not meant to downplay the potential effects of EDCs; rather, it highlights the need for more rigorous studies."

Another human health issue regarding EDCs is that the mainstream research has focused mainly on the impacts of the EDCs on reproductive functions. However, quite a number of scientists are concerned that the impacts can be much wider and many other bodily functions may be affected. As an example, more than 130 scientists, mostly European, gathered in Prague on May 10-12, 2005 and issued a 38-item declaration on EDCs. Item 6 of the declaration states that "Little or no information is currently available regarding the effects of endocrine disruptors on disease condition outside the reproductive system such as metabolic syndrome, neural development, childhood cancers, cognitive development, immune problems, psychological disorders, learning and memory development, and others. In many cases there are causal links between endocrine disruptors and these diseases and more scientific information is required."

3- EDCs Challenges for Water Supply

EDCs have been found in both ground and surface waters. In a few cases, they also have been found in finished waters. However, no human health impacts related to EDCs from water supply have been reported in the mainstream literature. Despite this, the customers perceive the issue as troubling, and their perceptions can become our reality. Furthermore, some scientists believe that conventional methods used for assessing the safe level of EDCs have major shortcomings. The conventional method uses animal testing and mainly assesses the impacts on their reproductive system. The critics believe that the impacts are often not seen in the offspring until after they reach adulthood and not necessarily in the exposed organism, that the impacts are not limited to the reproductive system, and that the method considers EDCs one at a time and, thus, ignores the impacts of a mixture of EDCs. As these issues are debated in the scientific community, the customers may become more concerned and the utilities must be prepared to address their concerns.

Conventional water treatment plants are designed to remove/control contaminants such as particulate matter, disease causing pathogens, and taste and odor generating compounds. Water utilities have done a great job in managing these groups of contaminants and are proud that their achievements have been recognized by the National Academy of Engineering as one of the top 20 engineering achievements of the 20th Century. However, conventional treatment is not very effective in removing chemicals that may have health impacts at very low levels in water (micro-pollutants).

Disinfection by-products (DBPs) are examples of micro-pollutants. They became an issue in the early 1970s when much better measuring methods became available; at the same time, we began to learn that they might cause cancer. Several hundreds of the DBPs have been identified. However, the EPA has been able to regulate only 9 of the DBPs in the past 35 years due to limited occurrence data and scientific knowledge of health effects. Even with the limited number of regulated DBPs, most water utilities will have to go beyond the conventional treatment provided by their plants to meet the upcoming new DBP requirements.

Compared to DBPs, EDCs, including PCPs and PhACs, are much more prevalent and may have health impacts at much lower levels. Regulating these potentially large numbers of micro-pollutants with the conventional approach would take much longer than 35 years and designing water treatment plants to remove them to extremely low levels will be major technical and financial challenges. Despite this, water utilities have to face these challenges and address their customers' concerns. AwwaRF has conducted several studies on the issue, and we can provide further information on them.

4- EDCs Challenges for Wastewater Services

Domestic wastewater also contains several groups of EDCs. Some are natural compounds produced by the human body or consumed with food, and then excreted into wastewater. Others are man-made such as those found in contraception drugs, detergents, and PCPs. Metals such as cadmium and certain polynuclear aromatic hydrocarbons (PAHs) are also

EDCs. Advanced wastewater treatment is quite effective in removing many of these EDCs. However, some will remain in the effluent. This could be primarily a general ecological issue, or it could become a human health issue if the plant effluent is discharged above a water supply intake. Also the removed portion of the EDCs is accumulated in biosolids and could make the land application of biosolids more controversial/problematic. Similar to AwwaRF, the WERF also has conducted several studies on the issue.

5- EDC Related Issues for our Metropolitan Area

As mentioned previously, specific human health effects of EDCs are generally unknown or not established at this time. Furthermore, there is very little monitoring data showing the occurrence (or non-occurrence) of EDCs due to limited capabilities and accepted standardized methods for lab detection at the low levels of potential concern. The primary source of monitoring data that is available at this time is a limited reconnaissance survey conducted by USGS for the metropolitan Washington region (performed in 2002). This survey effort took one sample from select water treatment plant intakes and wastewater treatment plant outfalls and analyzed the samples for a suite of suspected EDCs (including about 230 different hormones, pesticides, industrial chemicals, and PCP compounds). WSSC's Potomac and Patuxent WTPs were included in the survey. The Potomac WFP raw water only had detections of 17 compounds, 6 of which are known or suspected EDCs, and none of them are hormones. The Patuxent WFP raw water only had detections of 11 compounds, 4 of which are known or suspected EDCs, and none of them are hormones. None of these compounds was present in levels exceeding existing MCLs.

We also have data collected as part of the routine regulatory monitoring required under existing Safe Drinking Water Act (SDWA) rules. Of the >100 compounds monitored under the SDWA, only a small number (*i.e.*, those having a Maximum Contaminant Level, or MCL) are potential/suspected EDCs. For those potential/suspected EDCs that have an MCL, an analysis of the SDWA monitoring data since 2000 shows that only two have been detected at levels greater than the MCL in the raw water, and none have ever been detected at levels greater than the MCL in the finished water.

Although there is a paucity of directly relevant information, suspected EDC effects in fish have been reported in some Potomac River sub-watersheds upstream of the metropolitan area and WSSC's Potomac WFP intake. However, this is a national issue related to wide use of chemicals and, thus, is not limited to the Potomac River. The identity of the contaminant(s) that might be responsible for the observed EDC effects are being investigated, and possible sources for the contaminants are also being examined. However, the transport, fate and persistence of potential fish EDC contaminants to downstream Potomac River areas (including drinking water intakes in the metropolitan area) have not been identified or studied. In addition, no correlation has been established between observed wildlife (fish) EDC effects and potential human health effects, or what pharmaceutically active dose would be needed to produce any human health effect.

The suspected EDC effects on fish in the Potomac are based on the following information:

- Fish kills and widespread incidences of fish lesions in the South Branch Potomac River (Hardy County, West Virginia); follow-up studies discovered many reproductive anomalies among smallmouth bass, including egg production and egg-yolk precursor protein in male fish (*i.e.*, feminization).
- Earlier studies had found feminization of male common carp in the Shenandoah River near Millville (Jefferson County), West Virginia.
- Feminized male smallmouth bass were recently reported (December 2004) in the Potomac River near Sharpsburg (Washington County), Maryland, 170 miles downstream of Hardy County, WV. It is currently unknown if the suspected EDC effects are due to contaminants that have flowed downstream from West Virginia, or if a local Maryland source(s) of contamination may be responsible.
- Recent sampling in the South Branch Potomac River and Cacapon River indicated presence of pesticide, flame retardant, and PCP residues in stream water; several of these compounds were also found in blood plasma collected from intersex fish. Some of the detected compounds are known or suspected as EDCs in fish.

Responses to EDC Challenges at the National Level
and by the WSSC and the Potomac DWSP Partnership

6- The EPA Approach

The EPA received programmatic mandates from Congress in 1996, under the Food Quality Protection Act (FQPA) and Safe Drinking Water Act (SDWA). Under the SDWA, EPA plans to screen down the universe of tens of thousands of potential contaminants to a proposed contaminant candidate list of about a thousand and then, using the expert judgment narrow it down further to about 100 substances. These 100 potential EDCs will be investigated in detail. However, the EPA is just beginning to grapple with the significant challenges of a very complex subject and no quick or simple answer will likely emerge soon. Nine years has gone by and EPA still has not standardized a testing protocol, mainly due to the complex nature of the problem.

7- The Basis of the WSSC Approach

The approach that the WSSC is pursuing is based on several considerations:

a- We believe that the EPA approach, which is based on risk assessment and animal testing, could be very cumbersome and slow. On the other hand, as more facts about EDCs become available, we believe the concerns of our customers will rise and we must respond to their concerns. So far we have received only two inquiries from our customers on how the WSSC is handling the EDCs issue, but this is likely to increase with greater media attention.

b- We recognize that there are uncertainties related to the significance of EDCs in terms of human health risks, especially via the drinking water exposure route. Nevertheless, we may not want to wait for EPA's final determination. This is based on our need to be responsive to our customers, as stated above, and to pursue a Precautionary Principle (PP) framework, which, stated simply, means it is better to be safe than sorry.

c- The PP framework is a well-recognized approach in the health and environmental fields. It was adopted unanimously by the 130 scientists who issued the Prague Declaration. Item 23 of the Declaration states "For the foreseeable future, regulation of endocrine disruptors will have to cope with the tension between the biological plausibility of serious, perhaps irreversible damage and delays in generating data suitable for comprehensive risk assessment. In view of the magnitude of the potential risks, we strongly believe that scientific uncertainty should not delay precautionary action for risk reduction."

d- We desire to pursue the PP framework in a manner that will not cause undue fear in our customers and to assure them that we will be ahead of the knowledge curve by pursuing the PP framework.

e- There is some potential for legal liability. Although, there is a move in Congress to create some liability protection for water utilities for non-regulated contaminants, the liability may remain. The proposed Bill (HR 1540) amends Section 1449 of the SDWA. Some of the amended language seems to be general in nature. The proposed Bill is quite protective for utilities in regard to regulated contaminants. However, its new Section (f) (2) allows suing utilities for unregulated contaminants, although under relatively strict conditions. Despite the strictness, it puts a major responsibility on utilities and makes them vulnerable even when they are in full compliance for all of the regulated contaminants. Passage of such a bill could become another driver to pursue the PP framework.

f- We realize that source control may be the most practical action at this time. The sources of EDCs are often scattered upstream of water intakes and are not controlled by utilities. Thus, we need to partner with others to gain influence and cost effectiveness for management practices. We were able to establish such a partnership, after several years of work, in September 2004 as described below.

8- Formation and Work of the Potomac River DWSP Partnership

About 7 years ago, the WSSC Environmental Group Leader accepted an invitation by the Maryland Department of the Environment (MDE) to serve on a Task Force to develop a Source Water Protection Program for Maryland as required by the EPA. This participation enhanced the trust of MDE in WSSC capabilities. Consequently, MDE gave WSSC a grant of \$380,000 to conduct, on behalf of MDE, a Source Water Assessment (SWA) for all Maryland water plants that withdraw water from the Potomac River. One of the recommendations of the SWA was to create a regional partnership to protect the Potomac River for water supply needs. We pursued this recommendation and the Potomac River Drinking Water Source Protection (DWSP) Partnership was created in

September 2004. Since then, the Partnership has adopted a Strategy Plan, which includes two priority issues to be pursued, namely pathogens and emerging contaminants. EDCs are the first group of emerging contaminants on the Partnership priority list. Dr. Martin Chandler of the WSSC Environmental Group chairs the EDCs workgroup of the Partnership.

One of the significant efforts of the Partnership was to hold an expert workshop on EDCs to gain a better understanding of this complex issue and to develop a framework for potential actions that the Potomac DWSP Partnership can pursue. Dr. Chandler coordinated the planning for the workshop. We wanted to make the workshop not just a vehicle for knowledge sharing, but also a mechanism to integrate existing expertise in a framework. We issued a Task Order to our Water Research BOA consultant to prepare a draft framework for discussion by a panel of experts, mainly the scientists who gave presentations during the workshop. We guided the consultant with the key elements of the framework. The draft of the framework was discussed in the workshop. In brief, it included three steps: 1- raw water assessment for presence of EDCs and finding/prioritizing the sources of the observed EDCs; 2- identifying the BMPs for controlling their sources; and 3- keeping the customers and stakeholders informed about the findings. However, no consensus was reached on the first two steps.

Subsequently, the representatives of the three large metro DC utilities using the Potomac River followed up the workshop with more deliberation and have reached a preliminary consensus for a revised framework. The consensus includes developing a joint approach for communicating with our customers about EDCs, performing a survey of water utilities nationwide to identify how they are facing the EDC challenges, encouraging AwwaRF to support research for an EDC monitoring/management strategy for utilities, and pursuing legislation to protect utilities from liability for non-regulated contaminants.

There is one specific BMP that WSSC may want to consider because it is within our ability to implement. Given that EDCs major impacts seem to occur during pregnancy, use of highly purified bottled water for sensitive populations may be one of the BMPs. It may be beneficial to sensitive customers. It also could provide utilities with some degree of legal protection against liability related to non-regulated contaminants. However, it can be perceived that the water we supply to our general customers is not safe.

9- The Next Step

Our next step, after the adoption of the framework by the Partnership, is to obtain funding to pursue the framework. We will consider shared funding by the members of the Partnership as well as grant funding. We also will consider pursuing the framework via the Tailored Collaboration Program of AWWARF.

WSSC Acknowledgements: Environmental Group staff, including Dr. Martin Chandler, Plato Chen, Bob Buglass and Dr. Jin Shin, provided support for and reviewed this briefing. Their contributions are acknowledged and greatly appreciated. M. T. Habibian
10/13/05

ATTACHMENT C

WSSC Letter to Senator Mikulski for STAG and AwwaRF funding FY07

ATTACHMENT D

History of EPA and STAG funding from the Congressional Research Service

ATTACHMENT E

PowerPoint Presentation on “Intersex Fish and EDC Issues” by WSSC to the Montgomery County Council T&E Committee, September 2006.

Chairman TOM DAVIS. Thank you very much.
Mr. Jacobus, thanks for being with us.

STATEMENT OF THOMAS JACOBUS

Mr. JACOBUS. Chairman Davis and members of the committee, thank you for the opportunity to be here today. I am Tom Jacobus, general manager of the Washington Aqueduct.

The Washington Aqueduct operates two water treatment plants and other facilities that provide water to its wholesale customers. These customers are the District of Columbia, Arlington County and the city of Falls Church. Falls Church further serves an area of Fairfax County and the town of Vienna. Washington Aqueduct is owned and operated by the U.S. Army Corps of Engineers.

All of the water treated at the Dalecarlia and McMillan plants is withdrawn from the Potomac River either at Great Falls or at Little Falls. Washington Aqueduct's principal focus is on producing safe drinking water. This means that we pay very strict attention to meeting current regulatory standards, and it also means that we are looking to the future to ensure that treatment operations are always protective of the public health.

A few examples of what we do are we participate in EPA's ongoing evaluation of unregulated drinking water contaminants. We are an active participant in both the regional and national groups whose purpose is to advance the science of water. We contribute to the work of the American Water Works Association Research Foundation by direct funding and participating in research projects. Our engineers and scientists prepare technical papers and attend conferences to ensure we are current with industry technology and regulatory developments. Additionally, we have contractual relationships with nationally renowned consultants in the field of water treatment. We use those consultants to help us evaluate future treatment operations.

We are certainly aware of the reports of the fishermen and scientists in the Potomac River basin finding sexually abnormal, male smallmouth bass, and this phenomenon is not limited to the Potomac River Basin. Our engineers and scientists have been keeping abreast of the research into endocrine-disrupting chemicals. We believe that our participation with research, the research and water industry groups and our collaboration with EPA in support of their contaminant candidate listing are very effective ways to be involved in this issue. We will continue our involvement in the research of emerging contaminants, and will be prepared to take necessary steps to modify the treatment process to comply with any regulations that come from the results of the ongoing scientific investigations.

I'll close these remarks by saying that Washington Aqueduct is also one of the members of the Potomac River Basin Drinking Water Source Protection Partnership. Two of the goals of the Partnership are, first, to maintain a coordinated dialog between water suppliers and government agencies and nongovernment agencies, people like represented here at the table here today and like the panel before us, people who are involved with source water protection, and second, we coordinate approaches to water supply protection measures in the Potomac River Basin. I think that these are

both very important aspects of a partnership that has been developed by people locally and regionally here who are aware of the endocrine disruptor issue and other issues that face the—that give us challenges in the water treatment business.

So I thank you for the opportunity to be here today, and I'm looking forward to answering any questions the committee may have.
[The prepared statement of Mr. Jacobus follows:]

TESTIMONY OF
THOMAS P. JACOBUS
GENERAL MANAGER
WASHINGTON AQUEDUCT
BEFORE THE
COMMITTEE ON GOVERNMENT REFORM
UNITED STATES HOUSE OF REPRESENTATIVES

October 4, 2006

Congressman Davis and members of the Committee, thank you for the opportunity to be here today.

I am Tom Jacobus, General Manager of Washington Aqueduct. Washington Aqueduct operates two water treatment plants and other facilities that provide water to its wholesale customers. These customers are the District of Columbia, Arlington County, and the City of Falls Church. Falls Church further serves an area of Fairfax County and the Town of Vienna. Washington Aqueduct is owned and operated by the US Army Corps of Engineers.

This federal ownership and operation of the water treatment facilities stems from the beginning of the water system for the District of Columbia in 1852. The US Army Corps of Engineers built and operated the system, and in the intervening years has continued to expand and modernize the treatment plants to meet increasing demand and to improve the quality of the drinking water.

Washington Aqueduct receives no direct federal funding. All funds for operations, maintenance, and capital improvements come from its wholesale customers.

All of the water treated at the Dalecarlia and McMillan plants is withdrawn from the Potomac River either at Great Falls or at Little Falls. The treatment processes are regulated by Region 3 of the US Environmental Protection Agency (EPA). The water production operations at Washington Aqueduct are in compliance with all environmental requirements, including those of the Safe Drinking Water Act.

Throughout the production process, samples are collected and analyzed for bacteria and organic and inorganic substances. Once delivered to the distribution system, the water undergoes additional sampling and analysis. Each year, Washington Aqueduct's EPA-certified water quality laboratory analyzes more than 65,000 samples of the source water and the finished water to determine its quality. All of this is done to ensure the safety of the water provided to our customers.

Washington Aqueduct's principal focus is on producing safe drinking water. To ensure that we will continue to provide drinking water that meets future regulations, we participate in EPA's ongoing evaluation of unregulated drinking water contaminants. Also, we are an active participant with both regional and national groups whose purpose is to advance the science of water. We contribute to the work of the American Water Works Association Research Foundation by direct funding and by participating in

research projects. Our engineers and scientists prepare technical papers and attend conferences to ensure we are current with industry technology and regulatory developments. Additionally we have contractual relationships with nationally renowned consultants in the field of water treatment. We use those consultants to help us evaluate options for future treatment.

We are certainly aware of the reports of fishermen and scientists in the Potomac River basin finding sexually abnormal male smallmouth bass. We are also aware that this phenomenon is observed not only in the Potomac River, but also elsewhere both nationally and internationally.

Our engineers and scientists have been keeping abreast of the research into endocrine disrupting chemicals. We believe that our participation with research and water industry groups and our collaboration with EPA in support of their Contaminant Candidate Listing are very effective ways to be involved with this issue.

We will continue our involvement in research of emerging contaminants and will be prepared to take necessary steps to modify the treatment process to comply with any regulations that come from the results of the ongoing scientific investigations.

I'd like to comment on one other activity in which we are involved. Chemicals can get into the source water, in our case the Potomac River, in a number of ways. If

we can prevent the chemicals from entering the river, then they pose no risk to the drinking water production process.

In April 2004, in conjunction with other water utilities in Maryland, Virginia and with EPA Region 3 and the US Geological Survey along with agencies from Pennsylvania, Maryland, Virginia, West Virginia and the District of Columbia, we formed a Potomac River Basin Drinking Water Source Protection Partnership. Two of the goals of the Partnership are to maintain a coordinated dialogue between water suppliers and government agencies involved with source water protection and to coordinate approaches to water supply protection measures in the Potomac River basin.

In September 2005, the Partnership held a workshop to educate water suppliers and government agencies on emerging contaminants in the Potomac River basin. Included on the agenda were endocrine disrupting chemicals. The Partnership is currently working with the American Water Works Association Research Foundation to address more research on endocrine disrupting chemicals in the Potomac River.

Thank you for the opportunity to be here today to offer these remarks. I am looking forward to answering any questions the Committee may have.

Chairman TOM DAVIS. Thank you very much.
Mr. Hoffman.

STATEMENT OF JOSEPH HOFFMAN

Mr. HOFFMAN. Thank you, Mr. Chairman and members of the committee. I greatly appreciate the opportunity to be with you today to testify before this committee on this issue.

I'll try to focus my summary comments of my written presentation on four areas: The roles of the Interstate Commission on the Potomac River Basin [ICPRB]; the Potomac Drinking Water Source Protection Partnership, which we've heard about, a role that ICPRB takes as coordinator to address legacy pollution caused by polychlorinated biphenyls [PCBs], that are showing up in the Potomac River. I'll use that as an example of one way that ICPRB helps in this issue, and then I'll try to give you a brief synopsis of some of the issues surrounding emerging contaminants.

ICPRB, I'm the executive director. My name is Joseph Hoffman. It was created in 1940 by an interstate compact that Congress ratified. We have five signatories, the States of Virginia, Maryland, West Virginia, Pennsylvania, as well as the District of Columbia. Federal participation on the Commission is through three individuals appointed by the President as Federal commissioners. The Commission is non-regulatory. We address water quality and quantity issues from a watershed perspective. Our major functions are to provide sound science needed by our member jurisdictions for water resource decisionmaking. We want to provide leadership for cooperative efforts that our member jurisdictions have related to water resources. We want to facilitate opportunities and forums to address significant water issues.

Let me first take a brief time to discuss the Potomac Drinking Water Source Protection Partnership, which was begun in 2004 as a voluntary organization. It involves us with the three water utilities present at the table today as well as a number of other government agencies, including our State members and several counties. Trying to work to safeguard both public health and the environment, to date 19 organizations/agencies of the utilities and the States have joined this partnership.

The Potomac Basin is home to 5.8 million people who rely on the rivers and the groundwater for our drinking water supplies. Activities upstream of water supply sources—intakes, groundwater recharge areas—can and do introduce a variety of contaminants into the water sources by relying not just on the treatment plants that are out there but on multiple barriers to contamination created by a variety of watershed protection activities and efforts the Partnership seeks to enhance drinking water quality and minimize risk to public health.

We've got a number of work groups in this group. The first that was created, and the one that's really been active is the Emerging Contaminants Work Group, that tracks and reports on newly identified threats posed to the river. This partnership and this work group conducted a workshop in September 2005. It focused on emerging contaminants. We also have a pathogens work group, an early warning work group. I'm trying to illustrate to you today the

value of these coordinated efforts on taking care of our water supply.

Funding for the Partnership has been varied. We've gotten some support out of EPA. We've gotten some support from the utilities and the States, but it takes a variety of funding arrangements to make this thing happen.

I mentioned about PCBs. The ICPRB is serving as the technical and coordinating resource for the District of Columbia, Maryland and Virginia as well as for the EPA on trying to come up with some answers on PCBs in the Potomac. We're serving to ensure that we get one TMDL created for this interstate body of water we have called the "Potomac."

Emerging contaminants are of concern for us. They're a concern for our drinking water. These contaminants are not regulated. They are not established yet as we've heard earlier. Groundwater sources need to be a concern and need to be considered as we go into expanded monitoring, which is essential to be able to tie down these emerging contaminants.

The States are doing things. For example, the Virginia Department of Game and Inland Fisheries and the Department of the Environment and West Virginia's Division of Natural Resources and the Department of Environmental Protection are addressing some of the concerns upstream in the basin. We don't have answers yet. We had a question earlier. Advisories do not exist for these emerging contaminants in the waterways nor in the fish consumption. They do exist for mercury and PCBs.

ICPRB can play a role. We've been around for 66 years as a body that has been pulled together by our States and the Federal Government to work on some of these issues.

I'll close there. My full statement is in the record. I'll certainly look forward to questions at a later point in the panel. Thank you, Mr. Chairman.

[The prepared statement of Mr. Hoffman follows:]

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Testimony of the
 Interstate Commission
 on the
 Potomac River Basin

Presented by
 Joseph K. Hoffman
 Executive Director

Hearing:
*Ova-Pollution in the Potomac: Egg-Bearing Male Bass and
 Implications for Human and Ecological Health*

October 4, 2006

House Committee on Government Reform

The Honorable Tom Davis
 Chairman

(*)-Executive Committee
 (a)-Alternate

The ICPRB is an interstate compact commission established by Congress in 1940. Its mission is the enhancement, protection, and conservation of the water resources of the Potomac River and its tributaries through regional and interstate cooperation. Represented by appointed commissioners, the ICPRB includes the District of Columbia, Maryland, Pennsylvania, Virginia, West Virginia, and the federal government.

INTRODUCTION

Mr. Chairman, I appreciate the opportunity to testify before your Committee today as part of its investigation of recently reported abnormalities in fish in the Potomac watershed and its examination of the steps that governments are taking to ensure effective protection of human and ecological health.

I will focus my comments on four (4) areas:

1. The roles of the organization that I represent, the Interstate Commission on the Potomac River Basin (**ICPRB**), which is one of a number of river basin-focused organizations created by various states and Congress with water resources management functions;
2. The Potomac Drinking Water Source Protection Partnership;
3. A regional coordination role where agencies have banded together with a single coordinator to address the legacy of Polychlorinated Biphenyls (PCB's) in the Potomac River; and
4. A brief discussion of emerging contaminants and their impacts in the Basin.

ROLE OF ICPRB

The ICPRB is an interstate agency created, with the Potomac Valley Conservancy District, by an interstate compact ratified by Congress in 1940. Membership is comprised of five signatories (the commonwealths of Pennsylvania and Virginia, the states of Maryland and West Virginia, and the District of Columbia), with the federal government as a participant through the Presidential appointment of three (3) United States Commissioners. It was formed to address water resources issues in the 14,700-square-mile drainage area that forms the Potomac River watershed. It is a non-regulatory body that addresses water quality and water quantity issues from a watershed perspective. Its major functions are to provide the sound science needed by its member jurisdictions for water resources decision-making in the basin, to provide leadership for cooperative efforts of our member jurisdictions relating to the water resources of the basin, and to facilitate opportunities and forums to address significant water issues.

Our Commissioners, appointed by the member jurisdictions, represent a wide range of basin interests. Through the ICPRB, the Commissioners seek *"to enhance, protect, and conserve the water and associated land resources of the Potomac River and its tributaries through regional and interstate cooperation"* as their fundamental mission. The ICPRB has been doing this in a variety of ways through many collaborative efforts with our member jurisdictions and with other partners both in and outside the Potomac basin.

As examples of these efforts, three (3) activities are noteworthy. First, ICPRB's Section for Cooperative Water Supply Operations on the Potomac (CO-OP) manages the distribution of stored water during times of drought for the Washington Metropolitan Area under the authority of the Water Supply Coordination Agreement adopted by the regional water suppliers, the District of Columbia and the ICPRB. Many members of your Committee, and others throughout the region, may know about our role in effective management of water supply withdrawals while meeting environmental flow objectives, which I will be happy to detail for members outside of this presentation.

Second, ICPRB is directly acting to develop a coordinated action plan to reduce impairments from the residual impacts of PCBs in the Potomac River and in several tributary areas. I will briefly discuss the ICPRB role later.

Third, and most directly related to the issue before this Committee is the ICPRB role in coordinating and administering the organization known as the Potomac Drinking Water Source Protection (DWSP) Partnership. In examining these efforts, I will now focus on this Partnership.

POTOMAC DRINKING WATER SOURCE PROTECTION PARTNERSHIP

The DWSP Partnership, begun in 2004, is a voluntary organization of drinking water suppliers and government agencies working to protect drinking water sources, thereby safeguarding both public health and the environment. Through work groups and active discussion at partnership meetings, the DWSP Partnership is pursuing a strategy for enhancing source water protection as recommended by source water assessments that were prepared throughout the Potomac basin. Nineteen government agencies and drinking water utilities from throughout the Potomac basin have formally joined the growing DWSP Partnership. Added participants, including citizens and more local governments, are expected to become active in future months and years.

The Potomac River Basin is home to over 5.8-million people who rely on the basin's rivers and ground water for drinking water supply. Activities upstream of water supply intakes or in ground-water recharge areas can introduce contaminants to water sources for these inhabitants of the basin. The Partnership was formed, in part, so government agencies and water utilities could cooperatively address drinking water quality concerns arising in these source water areas. By relying not only on treatment plants, but also on multiple barriers to contamination created by watershed protection efforts, the Partnership seeks to enhance drinking source water quality and minimize risks to public health. The Partnership has identified several issues of importance and has formed separate workgroups to focus on:

- Emerging contaminants,
- Pathogens,
- Disinfectant byproduct precursors,
- Urban issues,
- Agricultural issues, and
- Development of an early warning and emergency response system.

Each of the workgroups has identified objectives, activities, and milestones for its focus topic.

The role of the Emerging Contaminants Workgroup is to support the DWSP Partnership by tracking and reporting on findings of research and monitoring of persistent and newly identified threats posed to the Potomac River drinking water supply. An initial focus of the workgroup is on endocrine disrupting chemicals (EDCs). The workgroup's short-term goals include defining and prioritizing EDCs based on a review of current knowledge and consultation with experts, assessing potential sources for the priority EDCs in the Potomac River, and identifying appropriate best management practices for their control. The workgroup's long-term goal is to enhance, through monitoring of ongoing research by others, the Partnership's and local stakeholders' understanding of EDCs identity, sources, distribution, possible human and

ecological health effects, treatability, and management practices to limit their proliferation in the environment. The DWSP Partnership conducted a workshop on Emerging Contaminants and Water Supply on September 19, 2005.

The Pathogens Workgroup was established to provide the Partnership with information on pathogens that may affect the raw water supplied by the Potomac River and its tributaries. The workgroup will seek to understand the sources of pathogens in the Potomac watershed and methods for controlling their introduction into the water supply. It also will try to create alliances with other stakeholders in developing a plan to reduce pathogen loads in the river. In addition, the DWSP Partnership organized a Pathogens Workshop on June 28, 2005, which focused primarily on *Cryptosporidium*, to learn more about pathogen sources and begin discussion on a strategy to reduce pathogen loads.

The Early Warning and Emergency Response Workgroup is intended to better prepare the Partnership's member utilities to respond in the event of a spill or other incident that affects their water supplies. ICPRB has had a spill model for parts of the basin for over a decade. This is being upgraded and exercised to make users more familiar with its capabilities. The workgroup will evaluate the need for further modifications and enhancements and help to coordinate the development of needed components of such a system. It will also assist in the development of an emergency response plan to improve communication among all affected utilities in the event of a water supply emergency.

The Disinfectant By-Product (DBP) workgroup was created to develop better information for Partnership utilities to address the disinfection by-product--chemicals and contaminants that result from current technology disinfection treatment techniques employed in the water supply industry. It will focus on prioritizing and conducting research to assess the relative contribution of different watershed sources of natural organic matter/DBP precursors to treated/distributed water DBP levels. The ultimate goal of this workgroup is to focus source water protection efforts on those sources most significant to DBP levels in treated/distributed water and to identify the most feasible and cost effective source water protection measures to address regional utility DBP issues.

The Urban Issues Workgroup will work to position the Partnership to better communicate drinking water needs in the Potomac River Basin to the agencies that oversee implementation of urban stormwater management programs. This workgroup is focused on urban stormwater including urban runoff, combined sewer overflows, and sanitary sewer overflows associated with storm activity. The goal of this workgroup is to promote implementation of better stormwater management to protect drinking water in the Potomac. The initial steps include gathering information on urban land use trends and on current stormwater management practices throughout the basin. After this process has been completed, priority communities will be identified and a dialogue started with those communities. This workgroup will develop a list of recommended urban stormwater practices to be used for advocacy throughout the watershed.

This discussion of the several work groups is provided to illustrate that a coordinated effort is seen as a viable method to address the current issues and conditions this Committee is considering today. The Partnership process, coordinated by ICPRB, allows a more thorough

understanding of potential contaminant sources, prioritizes protection areas, and plans watershed protection activities that are most likely to impact drinking water quality.

These watershed protection activities are in their initial phases of development and work will be implemented as funding becomes available. Funding the Partnership through a variety of arrangements is continuously being pursued and is essential to a basin-wide coordinated approach to:

- Identify the causes and the contaminants of concern,
- Prioritize needs based on impacts to human health and ecological considerations, and
- Implement change.

PCB REGIONAL INITIATIVE

In another area, ICPRB technical and coordinating capabilities are being used for a regional initiative. The District of Columbia, Maryland, and Virginia have placed portions of the tidal Potomac on their 303(d) impaired waters lists for PCB contamination and all three jurisdictions are required by the Clean Water Act to determine a TMDL (Total Maximum Daily Load) that will remove the impairment. Because it would be confusing to the public if separate TMDLs with potentially conflicting findings and recommendations were produced for this shared water body, the jurisdictions agreed that all would benefit if data collection and model development were coordinated and a single TMDL analysis done. The Interstate Commission on the Potomac River Basin was asked to take on that role. We have responsibility for determining where the PCBs are coming from and, in 2007, will be conducting the TMDL analysis. We carry out this responsibility in consultation with a Steering Committee, which includes participants from the involved jurisdictions and the U. S. Environmental Protection Agency, through which we share information and decision making at each step in the process so that each jurisdiction and the EPA is comfortable with and can take "ownership" of the final product: *One TMDL for an interstate water body.*

EMERGING CONTAMINANTS ISSUES IN THE POTOMAC BASIN

Emerging contaminants include endocrine disrupting chemicals contained in pharmaceuticals, agricultural and industrial chemicals, personal care products, pesticides, and fire retardants that have been discovered in surface and/or ground water. Reportedly more than 10,000 compounds are potentially of concern.

The potential sources of Emerging Contaminants (not definitively determined to date) include:

- * Pharmaceuticals
 - Pass through into wastewater plants, may not be fully removed
 - Rapidly growing use of many pharmaceuticals by humans and in animals
- * Agriculture operations
 - Growth hormones in various poultry and livestock
 - Pesticides and herbicides (no-till operations)
- * Various personal care products (e.g., anti-bacterial soaps)
- * Reliance on pesticides
- * Fire retardants and other industrial chemicals

There are several important impact issues in the Potomac River Basin relating to these contaminants:

* Drinking Water Supply - Anecdotal information suggests that contaminants exist at some small level; however, these contaminants are not routinely monitored. The contaminants are not on the list for which Maximum Contaminant Levels (MCLs) are established. To date, these contaminants have not become regulated under the federal drinking water program. The Potomac River basin includes multiple users of the water as it is withdrawn at the many drinking water intakes, used through domestic systems, and then returned to the river or a tributary after treatment.

Groundwater sources need to be considered in future actions, as about 1.2 million people in the Potomac Basin depend on over 110 million gallons per day of groundwater as their source of supply either through individual domestic wells or through public systems. Both methods normally use lesser treatment technology than do surface-supplied utilities.

As an aside, ICPRB is grateful to Congress for providing funds for the Commission to work with the U. S. Geological Survey on a basin-wide groundwater assessment. This partnership has resulted in the installation of real-time monitoring wells to aid in drought monitoring and has allowed the development of tools to assist local governments in assessing the impacts of growth on local groundwater supplies.

Expanded monitoring is essential to understanding and determining the impact of these contaminants on the drinking water supply and its human consumers.

* Fish Resources - The intersex fish issue has emerged as a public concern and fish showing evidence of this problem have been seen in several areas of the basin. Testing and evaluation continues, primarily through the U. S. Geological Survey. At the state level, Virginia's departments of Environmental Quality and Game and Inland Fisheries, and West Virginia's Division of Natural Resources and Department of Environmental Protection are actively investigating with some coordination between the groups as resources allow. Although not directly attributed to this problem as a cause or an effect, there have been fish kills and fish with lesions in several areas of Potomac River Basin, including the South Branch of the Potomac, the Shenandoah River, and even the tidal estuary south of Washington (and in drainage areas outside the Potomac basin). There are many potential stress factors that could contribute to the intersex problem, and it is likely that more than one factor is involved. Further research and funding are essential to understand the role of emerging contaminants in this process. Collectively, the fish with intersex characteristics have not yet been seen as a reason for a fish consumption advisory to be issued (advisories do exist in the Potomac for mercury and PCBs).

* Wastewater - The broad category of emerging contaminants is not regulated through effluent criteria prescribed for wastewater plant discharges. Methods of testing and detection limits for emerging contaminants are not standard nor routinely sampled. The level of emerging contaminant removal is not well-documented, and thus it is likely that some contaminants remain after treatment. The advanced wastewater treatment used in many facilities in the basin focuses on bacteria, disinfection, and nutrient removal. The Blue Plains wastewater plant that handles over 300 million gallons of wastewater per day has no drinking water withdrawals below its

discharge.

* Bio-amplification - We do not have information that tells us if or how these substances accumulate in human or fish tissue. There is uncertainty and many unknowns about the movement of these contaminants in food chain, retention factors, etc. More answers are needed.

Agencies, entities, and organizations addressing the issues surrounding emerging contaminants:

* U. S. Geological Survey - Especially fish intersex, kills, lesions, and related issues; some water supply topics are addressed with ongoing programs.

* U. S. Environmental Protection Agency - Principally in drinking water program (source water protection); active in Potomac.

* ICPRB - Potomac Drinking Water Source Protection Partnership (DWSP). Includes EPA, USGS, states, water utilities, county governments, regional agencies (Metropolitan Washington Council of Governments, etc.)

* American Water Works Association Research Foundation - Approximately \$5 million in about 20 projects. (Funding limitations constrain the timing and amount of work that can be accomplished).

* States - Water supply agencies, environmental agencies, fisheries agencies. At this time all levels of government have various fiscal restraints, so resource availability for funding and coordinating programs is not clear.

* Water suppliers - Multiple barrier approach to protecting/using water sources. Limited availability/implementation of newer treatment methods (i.e., granular activated carbon filtration) are used in few facilities in the Basin. Until we obtain a more complete knowledge of the needs and levels of concerns, more research is necessary. Potomac DWSP Partnership is one available action group.

ICPRB can play a vital role in addressing the issues involved in emerging contaminants, including:

* Regional coordination of efforts of interstate, interagency, and stakeholders (including federal partners)

* Data/technology development and exchange

* Potentially hosting a regional conference

* ICPRB Leadership can:

- Coordinate the development of a unified science plan - the who, what, where, when and how. This could be done via the discussed workshop.

- Build Consensus in the critical early-steps research components, without which we could end up with expensive answers to the wrong questions.

- Plan potential unified management steps for the time when information content reaches appropriate juncture.

- Devise a regional plan for management and communications.

All of these steps and actions involve both state and federal agencies and stakeholders. In addition to the USGS, we need to have the EPA, USDA, and FDA involved from the start. Unfortunately, while we recognize the importance of emerging contaminants in the context of water resources, ICPRB has not been able to allocate more than a nominal amount of its budget to address this issue. While we recognize that this is not an appropriations hearing, as an agency, ICPRB had, until 1995, a direct federal appropriation that would have allowed us to commence action much more rapidly under circumstances such as this. Today, while we have a proficient and able staff, they are funded largely by specific grants or projects secured from a variety of sources, with limited flexibility for diversion to this work.

CONCLUSION

As I conclude, let me present a summary of lessons learned in the Potomac River Basin with respect to water resources management that may prove valuable to coordinate solutions to the issues being discussed today:

- We have found through the Potomac Basin CO-OP water supply program that significant financial resources were saved by governmental jurisdictions and a wide range of interests operating as a *regional system*. Interstate agencies such as the ICPRB can play a significant role in the coordination necessary to such a system and the management of its resources. Innovative, regional, cooperative planning, rather than completely independent operations, has proven beneficial and effective over the last 66 years since ICPRB was formed.

- The Interstate Commission on the Potomac River Basin is recognized regionally and internationally as a good model for managing water resources on a watershed basis because of its ability to manage across political boundaries, achieve economy by acting as a clearinghouse for data exchange, and address conflicting objectives water quality, quantity, and resources.

- Cooperation, coordination, and communication among impacted agencies and organizations is essential to effectively address the health and maintenance of the Potomac River Basin's ecological balance.

- Local and regional action is essential, but we all know that water is not governed by state and municipal boundaries. The DWSP Partnership, under the ICPRB umbrella, is an excellent example of a structure that allows multiple jurisdictions and partners to work together. Congress and our signatories understood in 1940 what they do now: Interstate action is required to eliminate the political impediments that may impact the health and welfare of the Potomac River Basin.

- Federal agencies and the Congress have both a major leading and a supporting role to play, especially in research and in funding national efforts to protect our drinking water sources.

- The Potomac models are successful because:
 - * The cooperating utilities need an interstate cooperative approach in order to be successful,
 - * The states and federal agencies fund the programs to achieve a high degree of scientific excellence and cooperation, and
 - * Parties have all given, and continue to give, their cooperation for the common good.

As Executive Director of the Interstate Commission on the Potomac River Basin, I appreciate the opportunity to have participated today in helping you to understand the active role we take in addressing the health and welfare of the Potomac watershed. Thank you, Mr. Chairman.

Chairman TOM DAVIS. Thank you very much.
Mr. Merrifield.

STATEMENT OF ED MERRIFIELD

Mr. MERRIFIELD. Mr. Chairman and members of the committee, on behalf of Potomac Riverkeeper, thank you for the opportunity to present this statement to the committee. My name is Ed Merrifield, and I'm executive director and riverkeeper.

Potomac Riverkeeper's mission is to protect and restore water quality on the Potomac River and its tributaries through citizen action, education and enforcement. We have been actively following the problem of fish intersex since it was first uncovered in our watershed by the U.S. Geological Survey in 2003. At that time, scientists were trying to determine the cause of fish kills 230 miles upstream from Washington, DC, when they discovered ovaries in male fish testes. The Potomac Riverkeeper played a role in educating the public about the problem by providing information to the Washington Post's front-page story on intersex fish in October 2004. Other stories followed, but because the problem was distant from the Washington, DC, area and because the focus was on fish health and not human health, public interest in EPA action lagged. Two years later, the intersex issue is front-page news again, more so than when scientists first learned of the condition.

The intersex fish are now turning up in the Potomac waters of our metropolitan area, renewing the conversation about what is causing such mutations and giving rise to a new question: "how does this affect the millions of people living in the watershed?" Although water treatment facilities do a good job filtering the metropolitan area's tap water according to the EPA's standards, as we've heard, pollutants not tested for by water treatment plants do exist in the river. We know that low levels of caffeine and insecticides, such as DEET, and a chemical produced when the body breaks down nicotine have been found, and they are not regularly tested for by water treatment plants.

While most scientists today are not ready to say which endocrine disruptors are responsible for intersex fish, the need to identify them is not new. The National Oceanic and Atmospheric Administration concluded in a June 2002 report that overt reproductive endocrine disruption in fish does not appear to be a ubiquitous environmental phenomenon. Rather, it appears to be associated with higher levels of contamination near pollution sources such as sewage treatment plants and industrial plants.

In 1996, Congress created an EPA Office dedicated to researching endocrine disruptors. Ten years after its creation, the Office has yet to release significant information about which endocrine disruptors are responsible for intersex or what their risk is to metropolitan drinking water.

A variety of sources emit potential endocrine disruptors into the river. Antibiotics that are excreted or otherwise flushed down toilets do not always get filtered before leaving treatment centers. Hormones from chicken waste make their way into water at poultry farms in Virginia and West Virginia. Stormwater runoff, which contains everything from pesticides and fertilizers to pharma-

ceuticals and personal care products, enter the water completely untreated as does raw sewage from combined sewer overflows.

The issue at stake is the disposal of hazardous material and potentially hazardous material in a responsible fashion. We need to actualize the goals of the Clean Water Act and stop dumping waste, medications and chemical runoff into the river. We are already over 20 years behind the Clean Water Act's stated goal.

Regarding human health, if scientists have not yet determined what pollutant is causing a reproductive health problem in fish in the Potomac, how can anyone say it is not in our drinking water? How can anyone say humans will not face a similar health problem? At best, as we've heard, all anyone can say is that they do not know if the endocrine disruptor effect on fish would affect humans. One cannot deny that there is potential threat to the millions of people who recreate, fish and draw their tap water from the Potomac River. We know there are reproductive problems happening to the fish and, as Congressman Van Hollen said, these affected fish are analogous to the canary in the coal mine. The fish are our warning.

Potomac Riverkeeper, Inc., on behalf of all citizens living in the watershed, is here today to ask Congress, in cooperation with organizations like mine and the entire scientific community, to proactively work to save our Nation's river. With over 5 million people in the Potomac watershed, with Washington, DC, being a destination for millions of tourists, with minimal heavy industry in the watershed and with Members of Congress and their families living here much of the year, it makes sense to focus on the health of this river.

To believe we cannot stop these pollutants from entering our water is to sound the death knell of the goal of the Clean Water Act. By working together, we can make the Potomac a model river, paving the way for cities and States around the Nation to clean up their water supply. With the full support and cooperation of the U.S. Government and its agencies, we can have a fishable, swimmable Potomac with plenty of clean, safe drinking water for all.

Thank you again for hearing my testimony today, and I'll look forward to working with the committee in the future.

[The prepared statement of Mr. Merrifield follows.]

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Mr. Ed Merrifield
Executive Director/Riverkeeper
Potomac Riverkeeper, Inc.

Testimony
Before the United States House of Representatives
Committee on Government Reform

Hearing on:
Ova-Pollution in the Potomac: Egg-Bearing Male Bass and Implications for Human and
Ecological Health

October 4, 2006



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Colonel

Testimony Before the House Committee on Government Reform

Ova-Pollution in the Potomac: Egg-Bearing Male Bass and Implications for Human and Ecological Health, October 4, 2006

Mr. Chairman and Members of the Committee:

On behalf of Potomac Riverkeeper, Inc., where I serve as Executive Director and Riverkeeper, thank you for the opportunity to present this statement to the Committee. Potomac Riverkeeper's mission is to protect and restore water quality in the Potomac River, from its headwaters in West Virginia to the Chesapeake Bay, through citizen action, education and enforcement. We serve the millions of citizens living in the Potomac watershed and surrounding Chesapeake Bay community who rely on the river for everything from drinking water to recreation.

Potomac Riverkeeper has been actively following the problem of fish intersex—the condition in which hermaphroditic qualities emerge—since it was first uncovered in our watershed by the US Geological Survey in 2003. At that time, scientists were trying to determine the cause of a fish kill 230 miles upstream from Washington, DC when they discovered ovaries in fish testes. Potomac Riverkeeper played an instrumental role in educating the public about the problem by providing information to the *Washington Post's* front page story on intersex fish in October, 2004. Other stories followed, but because the problem was distant from the Washington, DC area, and because the focus was on fish health and not human health, public interest and EPA action lagged. Two years later, the intersex issue is front page news again—more so than when scientists first learned of the condition.

Intersex fish are now turning up in the Potomac waters of our metropolitan area, renewing the conversation about what is causing such mutations and giving rise to a new question: "How does this affect the millions of people living in the watershed?" Although water treatment facilities do a good job filtering the metropolitan area's tap water according to the EPA's standards, pollutants not tested for by water treatment plants do exist in the river.



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According to the *Post's* article, a 2002 test of the water in the Potomac yielded low levels of caffeine, an insecticide (DEET), and a chemical produced when the body breaks down nicotine, none of which is tested regularly by water treatment plants.

Over the last three years, endocrine disrupting chemicals (EDCs) have been linked with the intersex condition, though an exact EDC has not been named. EDCs attack the endocrine systems of fish, usually during the larval stage, and turn on hormonal processes that are not usually turned on for male fish. In the Potomac, male smallmouth and largemouth bass are growing ovaries on their testes. Studies show that EDCs affect sexual development and behavior, and reduce fertility.

While most scientists are unready to say which EDCs are responsible for intersex fish, the need to identify them is not new. The National Oceanic and Atmospheric Association (NOAA) concluded in a June 2002 report that "overt reproductive endocrine disruption in fish does not appear to be a ubiquitous environmental phenomenon. Rather, it appears to be associated with higher levels of contamination near pollution sources such as sewage treatment plants and industrial plants." In 1996, Congress created an EPA office dedicated to researching EDCs. The Endocrine Disruptor Research initiative was mostly a grant-based office, giving away about 2/3 of its \$5 million budget. Ten years after its creation, the office has yet to release significant information about which EDCs are responsible for intersex—or what the risk is to metropolitan drinking water.

A variety of sources emit potential EDCs into the river. Antibiotics that are excreted or otherwise flushed down toilets do not get filtered before leaving treatment centers. Hormones from chicken waste make their way into water at poultry farms in Virginia and West Virginia. Stormwater runoff (which contains everything from pesticides and fertilizers to perfume and cosmetics) enters the water completely untreated, as does raw sewage from combined sewer overflows (CSOs). The issue at stake is the disposal of hazardous material and potentially hazardous material in a responsible fashion—we need to actualize the goals of the Clean Water Act and stop dumping waste, medications, and chemical runoff into the river. We are already over twenty years behind the Clean Water Act's stated goal.

Regarding human health, if scientists have not yet determined what pollutant is causing a reproductive health problem in fish in the Potomac, how can anyone say it is not in our drinking water? How can anyone say humans will not face a similar health problem? At best, all anyone can say is that they do not know if the EDC effect on fish would affect humans. One cannot deny that there is a potential threat to the millions of people who recreate, fish, and draw their tap water from the Potomac River. We know there are reproductive problems happening to the fish, and these affected fish are analogous to the canary in the coal mine. The fish are our warning.

Potomac Riverkeeper, Inc., on behalf of all citizens living in the watershed, is here today to ask that Congress, in cooperation with organizations like mine and the entire scientific community, proactively work to save Our Nation's River. With over five million people in the Potomac watershed, with Washington, DC being a destination for millions of tourists, and with members of Congress and their families living here much of the year, it makes sense to focus on the health

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of this river. The banks of the Potomac, and its tributaries, are home to much less industry than most other major rivers in America. To believe we cannot stop these pollutants from entering our water and therefore eradicate the intersex problem is to sound the death knell of the Clean Water Act. By working together, we can make the Potomac a model river—paving the way for cities and states around the nation to clean up their water supply. With the full support and cooperation of the US Government and its agencies, we can have a fishable, swimmable Potomac, with plenty of clean, safe drinking water for all.

Thank you again for hearing my testimony today and I look forward to working with the committee in the future.

Ed Merrifield
Executive Director/Riverkeeper
Potomac Riverkeeper, Inc.



Chairman TOM DAVIS. Thank you very much.
Mr. Olson, thanks for being with us again.

STATEMENT OF ERIK OLSON

Mr. OLSON. Thank you. Last and hopefully not least, I wanted to just summarize the testimony, but I'll just note I believe it was Congressman Moran who mentioned the Theo Coburn and Pete Meyers book that was excellent that predicted a lot of things that now seem to be coming true. I think most of what that book suggested is ending up to be a true concern more than 10 years later.

Now, these endocrine disruptors are chemicals that basically can mimic or interfere with Mother Nature's system, our hormone system, and we consider—these systems are extremely delicate, and it's sort of like a bull in a China shop. The chemicals are like a bull in a body's China shop. If you consider the fact that all of these—all of the body functions for behavior and sexual differentiation when an embryo is being created and sexual maturation during puberty and reproduction during adulthood, all of those are controlled during—with these hormones at extremely low levels—we're talking parts per trillion/parts per billion—that the body naturally controls these when we start introducing these chemicals. As I say, they're like a bull in a China shop. They can really wreak havoc.

Why would a male fish have eggs in its testes? Why would some of these effects occur? Well, this is a very sure sign of exposure to some of these endocrine disruptors. In fact, the EPA has a proposed screening test, which isn't yet required which I'll get to, that actually uses this very kind of effect in order to evaluate whether something is an endocrine disruptor. So, clearly, we've got a problem here.

What in the Potomac is causing this? I don't think anyone can say for sure. Certainly, we're finding, as was mentioned earlier, the pesticide atrazine, the pesticide simazine and some other industrial chemicals in the water in the Potomac. We're not sure exactly which ones might be causing this effect, but certainly we've got an enormous amount of pesticide runoff. We have detergents and cosmetics coming out through sewage. We have concentrated animal feeding operations upstream, way upstream very often, and we have other polluters. Luckily, we don't have heavy industry like they do in many other parts of the country, but we do have endocrine disruptors in the Potomac water and in the river system.

Now, if we don't have measurable levels, if we're not sure what the chemicals are, does that mean there's not a problem? It does not. First of all, some of these effects occurred at extremely low levels, some of which can't even be detected in the water. Second, we don't really have a system to detect and analyze endocrine disruptors in our water supplies.

There's something I wanted to highlight also about endocrine disruptors that's extremely unusual. Many of us learned back in college that the dose makes the poison for a toxic chemical. We learned you have to have a very high dose to get an effect. Endocrine disruptors are turning a lot of that on its head. What's important is the timing. What I mentioned in the testimony is some of our scientists think that a lot of our thinking about toxins is going

to change as a result of these new data. Some studies just published within the last year show that exposure on a single day to a toxic chemical, to one of these endocrine disruptors, can cause these adverse effects such as small testes, female nipples in a rat, a birth defect in the penis called "hypospadias." Again, the bull in the China shop is operating. A single day of exposure can cause these kinds of effects at very low doses, so we don't really fully understand all of these effects, but we know that they're issues.

What are the public health impacts of drinking this water or of eating the fish? Mr. Cummings asked that. Several others have asked these questions. I don't think anyone can answer absolutely for sure, but first of all, we do know several things. One is that chemicals that are estrogenic or endocrine disruptors in fish are extremely likely to be estrogenic or endocrine disruptors in humans just as they are in polar bears, just as they are in panthers, just as they are in alligators, in mink, in birds. We're seeing similar effects, and the reason for that is simple, that Mother Nature, as she finds a way that a hormone works well in a lower form of life, has conserved that. So the same types of hormones are very conserved, the biologists would say, from lower forms of life all the way up to man.

Second, a lot of these chemicals that can feminize male fish are likely to feminize mammals as well as other species, and obviously, we're mammals, so we are concerned about that.

And third, something that's clearly estrogenic is in the Potomac. We don't know if it's in the drinking water. We don't know if it's in the sediments, if it's in the fish, in the food chain, but it's somewhere in there and we sure as heck ought to get some kind of an idea about that.

I notice that there's bottled water on the table in this committee room. It used to be, I remember in testifying in past years, that there was tap water, and I just wonder if there's anything going on here? Clearly, a lot of people are worried about their water supply. A lot of people—I see Mr. Moran is drinking a soda, but I think that a lot of us are worried about water supplies. A lot of us are worried about what this means, and we just aren't absolutely sure, but we do know that there's something going on. Something has to be done about it.

Some of these—the fact that fish live in the water and, therefore, expose their entire lives, again, doesn't necessarily mean that we're safe because we only drink water a few times a day or because we only eat fish once in a while. The people we're most worried about—and our scientists have looked at this for more than a decade—are pregnant women and their fetuses. These are the folks that are at greatest risk. So I might be perfectly happy to drink the water or to eat a fish or something along those lines, but I will tell you that I would certainly have concerns, if my wife were pregnant or if a family member were pregnant, about eating a fish that is coming from an area that has been feminized, where the fish are being feminized or drinking water that is coming from an area that may have these contaminants in it that we haven't yet identified. So there clearly are health concerns.

And the last point I want to make is what is EPA doing about this, and unfortunately, they're not doing very much. Congress was

very clear 10 years ago in the Food Quality Protection Act—and I hope we get a chance to pursue this—to require EPA within 3 years to develop this program. As has been brought out, not a single chemical has been tested under this program. Mr. Grumbles said earlier that there have been efforts to test under other programs. There have been a few efforts to test a few chemicals, but there is no systematic program to test for endocrine-disrupting effects, and I will say that just in August of this year, a month and a half ago, the EPA says they completed the entire Pesticide Safety Review Program under the Food Quality Protection Act. They say they reviewed the safety of every pesticide tolerance, and they did not include any Endocrine Disruption Screening Program testing for any of those chemicals. So we went through a 10-year process to review the safety of pesticides. For not a single one of them were there any EDSP, or Endocrine Disruption Screening Program, tests done. That's of grave concern.

What's the EPA going to do now? They say they're going to go back over the next 15 years and review the safety of all the pesticides that we're using in our food, in our water and so on. This is a serious problem and is something that needs to be done. Our testimony goes into some post solutions.

I see my time is up, and I hope we get a chance to discuss some of those.

[The prepared statement of Mr. Olson follows:]



Natural Resources Defense Council

**STATEMENT OF
ERIK D. OLSON
DIRECTOR OF THE ADVOCACY CENTER
AND SENIOR ATTORNEY
NATURAL RESOURCES DEFENSE COUNCIL**

**BEFORE THE COMMITTEE ON GOVERNMENT REFORM
UNITED STATES HOUSE OF REPRESENTATIVES**

**HEARINGS ON
“OVA POLLUTION IN THE POTOMAC: EGG-BEARING MALE BASS
AND IMPLICATIONS FOR HUMAN AND ECOLOGICAL HEALTH”**

OCTOBER 4, 2006

**TESTIMONY PREPARED WITH THE ASSISTANCE OF
DR. GINA SOLOMON, M.D., M.P.H., SENIOR SCIENTIST
DR. LINDA GREER, Ph.D., SENIOR SCIENTIST & DIRECTOR, ENVIRONMENT & HEALTH,
DR. SARAH JANSEN, M.D., Ph.D., M.P.H. SCIENCE FELLOW,
AND MICHAEL WALL, SENIOR ATTORNEY**

Chairman Davis, Ranking Member Waxman, and members of the Committee, thank you for the opportunity to testify this afternoon on the important issue of endocrine disrupting chemicals in the Potomac River and other water sources. I am Erik D. Olson, Director of the Advocacy Center and a Senior Attorney at the Natural Resources Defense Council (NRDC), a national non-profit public interest organization dedicated to protecting public health and the environment. I have studied and fought to control the adverse effects of toxic chemicals on human health and the environment for more than 20 years, working for both the government and for non-profit organizations.

For more than a decade, NRDC has been concerned that certain synthetic (man-made) chemicals can have the effect of mimicking or otherwise interfering with hormones in the bodies of animals and humans, with potentially devastating effects on reproduction and health, including cancer. Recent reports that male fish in the Potomac River and in upstream tributaries are developing abnormally, and have both male and female characteristics, is just one of a wide array of indications that we are contaminating our environment with synthetic hormone-like chemicals. These endocrine disrupting (ED) contaminants harm fish, wildlife, and most likely ourselves, our families, and potentially future generations.

In my testimony, I will address some of the key questions raised by members of the Committee.

- **What are endocrine disruptors?**

Endocrine disruptors are substances which interfere with the endocrine system by mimicking, blocking or otherwise disrupting the function of natural hormones. Examples of endocrine disruptors include various pesticides, PCBs, dioxins, and a variety of chemicals in plastics such as phthalates and bisphenol A. These plastic additives are used in very high volume and so we worry about high concentrations flooding into the environment through sewage discharges and the like. Also of particular concern to NRDC are endocrine disrupting chemicals used in cosmetics, lotions, and creams (for their emollient properties). We're worried about these because people put them directly on their skin, where they are then absorbed.

By EPA's definition, endocrine disruptors "interfere with the synthesis, secretion, transport, binding, action, or elimination of natural hormones in the body that are responsible for the maintenance of homeostasis (normal cell metabolism), reproduction, development, and/or behavior." The endocrine system controls basic body functions such as metabolism and growth, as well as more specialized functions such as behavior, sexual differentiation during embryogenesis, sexual maturation during puberty, and reproduction in adulthood. There are many endocrine glands, such as the pituitary, thyroid, adrenal, ovaries, testes, and more.

- **What could cause male fish to bear eggs?**

Egg-bearing in male fish is a sure sign that those fish are exposed to chemicals that mimic estrogen. In fact, a laboratory test using male fish is an integral part of the EPA's proposed screening and testing program for endocrine disruptors – because this phenomenon is such a clear sign of exposures to estrogens. Male fish bearing eggs is an example of a phenomenon known as "intersex", where both male and female sexual characteristics appear in one animal. Male fish become intersex when they are exposed to estrogenic substances in the water or in the food they eat.

- **Why are synthetic EDs of greater concern potentially than naturally-occurring endocrine-affecting chemicals like phytoestrogens?**

Although there are both naturally-occurring and synthetic substances that affect hormones, the synthetic chemicals are of much greater concern for three reasons: First, most of the synthetic chemicals aren't broken down and excreted as easily in the environment and in our bodies, so they can cause persistent effects that may build up over time; in contrast the natural substances are efficiently excreted. Second, humans and animals have evolved with the naturally-occurring plant-based chemicals for millennia, whereas the synthetics are new and our bodies are not equipped to handle them. Third, we can actually do something to control the environmental release of synthetic endocrine disruptors, but can't do much about natural sources.

- **What chemicals might be in the Potomac that could be causing this problem?**

The U.S. Geological Survey (USGS) has stated that it cannot confirm what potential ED chemicals may be in the Potomac. While NRDC has not seen all of the testing of the Potomac River water conducted by all government agencies, we have reviewed very limited testing of raw and finished water by the Washington Aqueduct by the Army Corps of Engineers, showing that low levels of the EDs atrazine and simazine are occasionally found in the Potomac.

Endocrine disruptors that are potentially in the Potomac include a few major categories of chemicals: pesticide runoff from urban and agricultural areas; detergent additives and cosmetics discharging untreated from sewage treatment plants; and discarded pharmaceuticals or those eliminated in human waste, which are again untreated at sewage treatment plants. Elsewhere in the country, paper mill effluent is notorious for endocrine disrupting effects, but there are no paper mills in the Potomac River watershed to my knowledge. However, since most of the 80,000 or so chemicals in use today have never been tested for estrogenic effects, it is quite possible that the culprit in the Potomac may be a chemical that is not being tested for and is not yet recognized as estrogenic.

- **If we only find low levels of these ED chemicals or find none, doesn't that mean that they are not present at levels of concern, so the problem with intersex male fish must be some natural or other non-chemical phenomenon?**

Since most chemicals have never been tested to see if they are endocrine disruptors, we can put very little stock in testing for the handful of known estrogenic chemicals. The contamination may be coming from a chemical that is not yet a recognized endocrine disruptor. In addition, it is important to realize that hormones can have effects at infinitesimal doses – as low as the parts-per-billion (ppb) or even parts-per-trillion (ppt) range. This means that the laboratory methods may not be sophisticated enough to detect some of these chemicals at levels that may be relevant to health. For example, published studies show that the pesticide atrazine can cause adverse effects on frogs, including impacts on reproductive organs, at 0.1 part per billion (ppb)—a level lower than many laboratories are able to reliably detect.

- **What does it mean that “the timing makes the poison” for EDs?**

EDs are changing the way that scientists think about toxic chemicals. Since ancient times, scientists said that “the dose makes the poison.” We now know that for many EDs, since only an extremely small dose is necessary to cause an adverse effect, often it is the “timing that makes the poison.” For example, it has been demonstrated that exposure of a fetus to extremely low levels of certain ED chemicals at precise moments during fetal development called “critical windows” of vulnerability (in some cases on a single day) can trigger an adverse effect. ED effects triggered by exposure during fetal development can range from feminization of a male to birth defects or hormonally-related cancer much later in life.

This is why pregnant women are told to be very careful about exposures during the first trimester of their pregnancy. DES, for example, a drug used by pregnant women a generation ago to control morning sickness, caused malformation of the reproductive system and cancer in both

males and females only when taken during specific weeks of fetal development. Similarly thalidomide caused dramatic birth defects from a single exposure on a single day between weeks 7 and 9 of development. Recent work has shown that effects during fetal development are exquisitely sensitive to timing. For example, a single one-time dose of dibutyl phthalate (a chemical in many cosmetics) to rats is sufficient to produce a range of reproductive tract malformations in male offspring in the absence of toxicity to the dam (mother). Even more amazing, these studies have shown different specific types of malformations of the male reproductive system can be triggered depending on the gestational day that the single dose is given. Doses at gestational day 16, for example, led to small testes and the development of female nipples in male rats. Doses at gestation day 17 led to hypospadias (a birth defect of the penis) and missing prostate lobes. Doses at gestational day 18 led to abnormalities of the bladder.

- **What are the potential public health issues here (both from eating the fish and from drinking the water)?**

The public health issues are hard to predict. However a few things are clear.

First, chemicals that are estrogenic in fish are likely also estrogenic in humans, since our hormone systems are very similar. In other words, hormones work the same in humans as they do in fish. In particular, the estrogen receptor has been conserved throughout evolution, and the mechanisms of action are very similar from fish to chickens to rats to humans. Second, chemicals that feminize male fish have the potential to have a feminizing effect in humans, especially in the fetus. Third, there is something estrogenic and unnatural either in the Potomac water or in the food chain in the river. There are still lots of research questions, but the bottom line is that there is a problem that needs to be addressed before we start seeing problems in more than just fish. These fish are the canaries in the coal mine – we ignore them at our peril.

Regarding potential health effects, although these effects are being seen in male fish, it is women drinking the water and eating the fish—and their fetuses—who are likely at greatest risk. Women of child-bearing age are at risk because male fetuses are particularly vulnerable to estrogen exposures during development. We know from animal studies that males exposed to estrogen-mimicking chemicals such as bisphenol A are prone to developing enlarged prostate glands with precancerous lesions as adults. There is also concern that interference with natural hormone action during development of the reproductive tract results in abnormalities in the development of genitalia (hypospadias and cryptorchidism – undescended testicles) as well as infertility later in life. In addition, exposure to estrogenic chemicals could promote the development of hormonal cancers in women, for example breast cancer

- **Is it true that since fish live in the water, they are probably dosed way more than people are, so there is no public health concern?**

Although we are much larger than fish, our bodies do not require larger doses of hormones to have effects. Hormones work in the parts per billion to parts per trillion range of concentrations - in all species. These amounts are incredibly small; an analogy for a concentration of one part per trillion is one grain of salt in an Olympic sized swimming pool. Synthetic endocrine

disruptors often require slightly higher concentrations to have the same effect as physiological hormones, however, the concentrations that cause these effects are not expected to differ greatly between species.

Fish are the canaries in the coal mine – we ignore them at our peril. They may be more exposed to certain contaminants in the water than humans are, although people who regularly drink the water or eat fish from the river are likely to be significantly exposed to the same ED chemicals. Some ED chemicals “bioconcentrate” as they move up the food chain; small fish exposed to contaminated food or water have moderate levels, but the larger fish that eat them, and big predator fish that eat those medium-sized fish, have increasingly high levels of the chemicals in their tissues. If there are effects in the fish, it tells us that there’s something seriously wrong in the river. If my wife or a family member were pregnant, I would certainly have concerns about her drinking that water or eating those fish.

- **What do the Food Quality Protection Act of 1996 (FQPA) and the Safe Drinking Water Act Amendments of 1996 (SDWA) require EPA to do about endocrine disruptors?**

In 1996, Congress began to get serious about endocrine disruptors, and in the FQPA ordered EPA to establish an endocrine disruptor screening and testing program for pesticides and certain other chemicals. The FQPA required EPA to develop this ED screening program by August 1998, and to “implement” the program by August 1999. (Federal Food Drug and Cosmetic Act (FFDCA) §408(p), 21 U.S.C. §346a(p), as amended by the FQPA). The program was supposed to require testing of all pesticides, and of any other chemicals that may have an effect that is cumulative with a pesticide, for endocrine disrupting impacts. A separate provision in the law required that EPA review the safety of all pesticide “tolerances” (the maximum allowable level of pesticides in foods) in three batches, all to be completed by August of 2006.

When EPA failed to adopt and implement the endocrine disruptor screening and testing program by 1999 as required by the FQPA, NRDC sued the agency for missing the deadline. NRDC and EPA settled that litigation in 2001, in an agreement initially reached with the Clinton Administration, but later explicitly ratified and supported by the George W. Bush Administration. In the settlement, EPA agreed to take numerous steps to expedite the adoption and implementation of the endocrine disruptor testing and screening program and to meet a series of deadlines for further action.

In addition, the SDWA Amendments of 1996 authorize EPA to provide for testing of any other chemical that may be found in drinking water sources and to which a substantial number of persons may be exposed, for potential endocrine disrupting effects.

- **Ten years later, how many chemicals have been tested, or restricted or banned due to endocrine disrupting effects under the Endocrine Disruption Screening Program?**

More than 10 years after the law was enacted, and more than seven years after Congress required EPA to “implement” the endocrine disruptor screening program, not a single chemical has been tested under EDSP, much less restricted or banned as a result of testing under the EDSP. EPA

recently claimed to have completed the FQPA-mandated safety review of all pesticide tolerances, yet it did its reviews with the benefit of a single EDSP-required test of a pesticide. While EPA has taken modest action to restrict a few uses of a few pesticides citing in part effects of the chemical on development, this has been rare and has not been an outgrowth of the EDSP or any routine or standardized ED testing. EPA's extensive delay in carrying out the endocrine disruptor program in violation of clear Congressional directives is causing continued public and environmental contamination with these dangerous chemicals.

- **Is EPA right to say that it is so complicated to screen and test for EDs that it is perfectly understandable that the agency has taken 10 years since the FQPA and the SDWA '96 passed, and that not a single chemical has been tested under EDSP?**

It is inexcusable that the EPA has not yet gotten this basic screening program into place ten years after it was mandated by Congress. The EPA federal advisory committee on endocrine disruptors (EDSTAC – Endocrine Disruptor Screening and Testing Advisory Committee), in which NRDC, independent scientists, industry, and others participated, unanimously recommended a limited set of rapid screens and follow-up tests to detect effects on male and female hormones, as well as on the thyroid. These screens and tests have been bogged down at EPA since 1998.

EPA's Endocrine Disruptor Screening Program (EDSP) has suffered seriously from inattention and neglect. No doubt there have been some unexpected events that slowed EPA's development and implementation of the program, but nothing extraordinary that could not have been dealt with had EPA treated the program as a priority and nothing that should have required the extended, unlawful delay that has occurred. In fact, EPA has not yet even identified the list of chemicals it intends to test, a step it could have taken without waiting for screens to be validated. We have recently formally informed EPA that we believe it is in violation of essentially all of the deadlines in the EDSP settlement agreement.

EPA has validated just one test of endocrine effects, the existing two-generation mammalian assay, which the Agency considers "valid for identification and characterization of reproductive and developmental effects, including those due to endocrine disruption." EPA could begin requiring use of that test to implement an endocrine disruptor testing program now, but EPA does not want to, preferring (it says for efficiency reasons) to wait until all assays come on line. Extremely slow progress is being made on some of those assays, and although EPA claims that it will begin to require testing by close of 2007, NRDC won't believe it until we see the testing requirements promulgated in the Federal Register. Meanwhile tens of thousands of chemicals are in widespread use with no idea whether or not they may be interfering with our hormones.

- **Does typical drinking water treatment technology get rid of ED chemicals?**

Standard treatment technology used by most water suppliers using the Potomac River (and indeed standard treatment technology used by over 90 percent of U.S. water supplies) does not get rid of most synthetic organic chemicals. For example, the Army Corps of Engineers-operated Washington Aqueduct (which supplies water to Washington D.C., Arlington, the Pentagon, National Airport, Falls Church, and some areas in Fairfax County), uses old-fashioned treatment techniques that have been around for about 100 years—coagulation, sedimentation, filtration

with sand and crushed anthracite, and chlorination/chloramination. While this treatment can remove many contaminants such as bacteria and dirt, it is not very effective at removing most synthetic chemicals, toxic heavy metals, or many radioactive contaminants. The treatment system used by the new plant at Fairfax County Water Authority (which serves a portion of that county), uses ozone and granular activated carbon; if properly designed, operated, and optimized, this treatment is capable of reducing most synthetic organic chemicals to extremely low levels. However, according to an NRDC survey of big city water systems in the United States several years ago, very few city water supplies (less than 10 percent) have invested in such modern water treatment technologies.

- **What needs to be done?**

Here's what needs to be done: (1) USGS in cooperation other agencies should be fully funded to complete a comprehensive chemical analysis of the water in the Potomac and other important water bodies to look for a wide array of synthetic chemicals including all currently known and suspected endocrine disrupting chemicals. (2) USGS and EPA should place caged fish at locations along the Potomac river to try to pinpoint where the contamination is entering the watershed. (3) EPA should complete an expedited evaluation and work with state and local authorities to require expedited use of improved sewage treatment systems, improved concentrated animal feeding operation (CAFO) treatment technologies, and modernized drinking water treatment technologies to better address contaminants including endocrine disruptors. (4) EPA's drinking water and other programs must be changed to test ED chemicals more frequently and to regulate them at lower levels; (5) full funding and rapid implementation of the EPA Endocrine Disruptor Screening Program.

Chairman TOM DAVIS. Thank you very much. Let me start the questioning.

Mr. Murray, I understand—you mentioned—well, I understand that all drinking water utilities are regulated by the EPA with EPA standards. Can you tell us a little bit more about these standards? Are these standards limited to maximum contaminant levels or they also prescribed testing and filtration methods? Could you give us a sense to the length of time between promulgation by the EPA of new standards for the production of clean drinking water and the steps in between?

Mr. MURRAY. Let's start with the maximum contaminant. Let's see, the first part of the question was the drinking water standards and are they just maximum—

Chairman TOM DAVIS. Are they just limited to maximum contaminant levels or are they prescribed testing and filtration methods?

Mr. MURRAY. Yes. We have both standards for the treatment that we require to meet and maximum contaminant levels in the finished water; and, as Mr. Brunhart said, there are a number of contaminants that we monitor for that are not yet regulated but we monitor to provide information to the agency so as to develop those regulations.

Chairman TOM DAVIS. So, you are way over and above your standards. You have your own standards even above the Federal standards.

Mr. MURRAY. Yes. There are compounds that we are monitoring for that there are not MCLs established yet, but we are doing it as part of the unregulated contaminant monitoring rule which allows EPA to develop additional MCLs and standards.

Chairman TOM DAVIS. What do you think? You have heard the testimony today about these, the mutant fish and everything else. Obviously, it gives you some concern and some hesitancy as you look through it. What is your take on it? I mean, does EPA appropriately describe and identify this, or are they behind the curve?

Mr. MURRAY. I sympathize with the complexity of the problem and the difficulty of establishing standards. We have been working with EPA and USGS to try to test some of these screening methodologies that they have been talking about. Mr. Olson referred to one of them. It is an estrodiol equivalence, and we have been working with them on attempting to see if that is a good measure of endocrine disruptors.

It is a complex issue. All of the information we have from the research to date would state that it is highly unlikely that it is a human health issue in drinking water, but we certainly, like the committee and everyone else, are very anxious for more information and more research and we want to do the right thing.

Chairman TOM DAVIS. OK. Mr. Olson, let me just ask, if I understand you correctly, you are saying we are currently not testing for chemicals causing endocrine disruption, but at the same time we haven't figured out what they are. How do we get from A to B? What do we need to be doing?

Mr. OLSON. Well, there are some tests that are used to determine whether something is an endocrine disruptor, and those are not routinely required for pesticides or for any other chemical. Where

EPA has fallen down, in our view, is that they haven't routinely required them. They haven't issued this endocrine disruptor screening program requirement. So it is sort of hit or miss what is tested.

We have 80,000-plus chemicals. The vast majority of them—I'll just hazard a guess—99 percent plus, have never been tested for these effects. So when we hear about meeting EPA standards—I used to work at EPA. Love the agency. It is a great place. But the EPA standards are kind of out of date, and they don't really deal with a lot of the problems.

And let me just give one example: EPA, to my knowledge, has not adopted a single new drinking water standard that wasn't ordered by Congress since 1979. Now that is a serious problem. What we have is Congress having to step in and tell EPA what to do.

Chairman TOM DAVIS. When Congress sets a standard, that is scary, right?

Mr. OLSON. Congress doesn't really set the standard. They just say, guys, it's been an awfully long time. Set a standard, for God's sake, for these chemicals; and that is what's been happening. Congress has to step in and say, set some standards. We heard about the contaminant candidate lists and all of these other proposals to move forward, but it's been 10 years and EPA still hasn't picked a new contaminant to regulate based on that.

Chairman TOM DAVIS. And the key for us, of course, is we know there are contaminants in the river. The question is, do we get them all out in the purification process? And I think, Mr. Murray, you are confident that you are doing that, but you continue to look at this and Mr. Brunhart; is that correct?

Mr. BRUNHART. Let me add to that. In addition to what is required to be regulated, and we're doing testing for chemicals for EPA, we both run state-of-the-art laboratories and invite any Member to come and take a tour to see exactly how robust our laboratories are at testing and providing the data to EPA.

I would add that we are, from WSSC's perspective, concerned, because environmental stewardship is one of our core values of what's going on with the wildlife. We are not alarmed for impact on human beings at this juncture, but there is a lot we don't know that essentially everybody before you today has reemphasized because we don't know the research or, over the course of time, the science on what could be 87,000 chemicals untested, as Congressman Van Hollen mentioned.

If we knew if it was one or two chemicals—this is our passion. This is our business. We don't make a lot of money on what we do. We do it because we serve citizens. If we knew it was those chemicals, we would work in our industry to get them out of the source.

One final comment because I know you have other questions. The reason I urge this to be considered at a national level is what is the engine to discuss the sources. The engine in water utility is AwwaRF, and we banded together to do some really interesting—nationally some miniscule studies that are bringing us forward as a utility and water industry. But there's many other industries that, in my view, should be banded together. There's EDCs in food, for example. And I could go on and on.

But who's going to be that engine? In my view, Congress could show us some leadership in a caucus to bring us all together to really address this.

Chairman TOM DAVIS. I think we will get some activity there.

Mr. Murray, a lot of Fairfax water comes from the aqueduct. It doesn't come directly from the river. We have had no problems there, is that right, with the mutant fish?

Mr. MURRAY. We have no evidence of a problem there, but, again, we are trying to advance the science that we know we are measuring for the right things. The limited testing that has been done on both the Potomac and the Occoquan at our treatment plants suggest that there isn't a significant concentration in the incoming water, and what we are measuring we are doing a good job of removing. So we are waiting for the science to catch up and allow us to refine that methodology and to give us more definitive answers on the health significance and concentration issues.

Chairman TOM DAVIS. Thank you.

Mr. Moran.

Mr. MORAN. Thanks very much, Mr. Chairman.

This is fascinating but also a very scary subject.

First of all, I did want one point of clarification. We have talked only about the feminization of male fish. Isn't there a masculinization of female fish? Doesn't that also occur? I don't know who wants to—somebody can confirm that. Isn't it just as prevalent?

Mr. MERRIFIELD. On the Ohio River, some fish were getting masculine characteristics. Female fish were getting masculine characteristics because of dairy farm chemicals that were going to the dairy farm. They had it very specifically. So it happens.

Mr. MORAN. So it happens to all of the sexes. This happens to be a situation that we are finding male fish with eggs in their testes.

The one that troubled me particularly, and I was surprised that the woman from the U.S. Geological Survey didn't seem to be particularly familiar with, but when they did this test in the Potomac, apparently in the area that comes right out from the sewage treatment area that 70 percent—they weren't finding smallmouth bass but they found largemouth bass and 70 percent of them, the males, had eggs in their testes. So this was very widespread problem.

What troubles me is the reason—I don't really have a lot of questions for this panel. You are doing your job. But you attempt to purify our water to the best you can, identify harmful chemicals and materials that could be harmful out of—take those out of the water. But none of you are responsible for the research to determine which of those chemicals are harmful or particularly what compound of chemicals can be harmful, and very little research has been done, if any, on the compound of chemicals. So we may find individual chemicals are OK, but when they are thrown in the water with other chemicals, they create a much more toxic effect.

I am very much concerned with regard to the intergenerational effect as well of some of these chemicals. I am recalling some of the things I read in the book by Theo Colburn in which it seemed to be—I pursued it and found that it was verifiable.

One was the rats apparently have—it is a triangle, and they have six eggs, a female rat. And they were showing how thin the membrane between the various eggs is that they did the experiments. And it is not dissimilar from the human membrane when the fetus starts—begins development. They put—I remember one case they put in a male fetus, I guess, between two female, and the membrane was so porous in every case the male turned out to be gay, to have feminine characteristics. And then they did a disrupter test and they found to almost a hundred percent—I am digressing here a little bit, but that research seems to be done by private groups, not by governmental groups; and when it is done by private groups, it seems like there are always critics, particularly in the Federal Government. It says, well, this hasn't been confirmed, and so we really don't need to look at it, and we're doing—you know, we are studying it, and we have a process going. It is particularly irritating for EPA that for 10 years they have had a process going and have yet to actually test one single chemical under this endocrine disruption category.

If you had your—this is a whole lot of introduction by way of asking my question—if you had your druthers, what would we be doing to make you more confident that you are able to do the job, you are responsible for carrying it out?

Mr. Merrifield seems to—

Mr. MERRIFIELD. Yes. The thousands and thousands of chemicals we have that are in the environment, if Congress doesn't come up with a way of stopping them from going into the water, we will never be sure if our water, what is coming out of our taps, is completely safe, because there will always be more chemicals to be checked and more fascinating stories that you have been telling about what can happen. Somehow we have to get back to the basic, the Clean Water Act, to stop all of this pollution getting back into the water.

Mr. MORAN. The two things that I came away with from reviewing that literature—and, granted, it was 10 or 12 years ago—was the effect of the compounded chemicals which we know virtually nothing about, and then the vulnerability of the egg, the fetus, within a woman's womb. Once it gets in there, it can cause an intergenerational effect that we—I mean, it is almost impossible to find the causal factor two or three generations subsequently. And no research was—or no public research has been done on it, and that is what is so scary.

I just don't feel as though this panel is being given the tools that you need to be able to carry out your job, which is really intensive research on these potential endocrine disruptors and related chemicals in terms of the public health.

So I thank you for the panel. I don't know that you are the ones who should be answering these questions. I think that we are ill preparing you to fully carry out your job, but you all do a good job, in particular as private commentators as well. Thank you for all your volunteer work and oversight that you provided. Thanks.

Chairman TOM DAVIS. Mr. Van Hollen.

Mr. VAN HOLLEN. Thank you, Mr. Chairman.

Let me thank all of the witnesses for their testimony.

Mr. Brunhart, thank you for your leadership at WSSC, where I get my water; and thanks for your kind remarks and the recommendations that you made and others have made of how we can move forward here.

If I can just ask the representatives who are tasked with the—responsible for providing the people in this region for safe drinking water, Mr. Murray, Mr. Brunhart and Mr. Jacobus, whether you are satisfied—this goes a little bit to Mr. Moran’s question—whether you are satisfied that the EPA is moving as swiftly as it can and should with respect to doing the research in this area.

Mr. BRUNHART. Well, I will make two comments. As I think we are today just by talking about a very important issue, I have learned a lot. I think the pace, in my view, is too slow. I think that EPA has—does not have as much funding as they would need to step up to the large challenge.

However, my personal concern is that when you have a large challenge, you incrementally address it and you try to prioritize and incrementally address the highest priorities, and I don’t see that happening in the pace. That is my personal view.

Mr. VAN HOLLEN. Thank you.

Any other comments from the others?

Mr. JACOBUS. I would say that I believe—I have confidence that EPA has the direction and the will and the understanding. As far as the pace, what Washington Aqueduct could do is we cooperate with programs to work on the contaminants list, to work on the unregulated studies. So we can provide it and work tirelessly to make sure the water we produce meets the regulations.

We have confidence in the regulations. We understand there are emerging contaminants; and we, as a water utility, have a responsibility to work with science and regulations and think we are doing a good job of that in trying to help EPA get to where they want to be and where we all need to be to have a high degree of confidence that the new substances that could be coming into the water can be removed.

But I would just say, in agreeing with Mr. Merrifield that it is very easy to—the treatment process for something that is not there is very simple. So if you can keep these contaminants out of the source water—in our case, the falling of the Potomac—that emphasis there is much easier to keep them out of the water than it is to devise treatment processes once they are in the water. So that is why all of us in the three utilities, together with our State and Federal and local partners, felt that this partnership locally would be a good idea and it has gotten started. It’s been there for a couple of years, and we certainly have a commitment of energy and local resources.

So I am encouraged—and there is a lot to be done, but I am encouraged and we are cautioned by the results of the science that we see and we want to do more.

Mr. MURRAY. I want to answer two ways.

First of all, I think EPA, as an agency, does a pretty darn good job of establishing MCLs, the process of establishing standards. I think that Mr. Moran captured it when he talked about the need for research. I spoke at some length about AwwaRF, a research foundation started by the water utilities. It was started years and

years ago because there was an unmet need for research, and I think that says it all.

Mr. VAN HOLLEN. Thank you.

My understanding is the research budgets in some of these areas are being cut back and the EPA is saying that, instead, the industry should be doing the research, which seems to me to get it entirely backward. This is a public health issue. This is research that should be done on behalf of the citizens.

I think the partnership is a great vehicle, I think, for coming together and putting, you know, pressure and making recommendations on the EPA. So I encourage all of you—Mr. Hoffman, your organization is the chair of that, as I understand it, is that correct?

Mr. HOFFMAN. We don't chair it. Basically, the administrator and coordinator try to pull together.

We will note for you for the record that we have our annual meeting of the partnership coming up October 25th. We suggested in our testimony—the full testimony for this committee today the idea that we can play a much larger role in trying to pull together this issue for the Potomac River Basin. I think, at the same time set a pretty good model in place for the entire country to follow as additional areas start to be concerned about this or other water related issues. We certainly are available to do that.

Unfortunately, we have only been able to devote a small portion of our budget to the endocrine disruptors and the emergent contaminants. However, it is one that we need to find a way to do some more things on.

Mr. VAN HOLLEN. I am pleased to hear that. Because, as Mr. Olson said and Mr. Brunhart said in their testimony, these chemicals tend to exhibit two chemicals: One is, they both said they don't exhibit conventional toxicological dose response characteristics in contrast to conventional contaminants. They may cause significant problems at very low levels. And the other issue is that they may have very powerful effects during the early stages of life, but the impact may be long term, and you may not be able to see them until quite farther down the road.

Let me, if I can, finish with a question. Obviously, we want to deal with this at the source level, No. 1, but there is also, of course, the treatment level, and I guess my question is—I don't know if this is a class of chemicals or agents that would lend itself to a particular kind of treatment, that even before you do all of the studies on whether it is going to have negative impacts, whether there is some kind of treatment that can be used, assuming there would be a negative impact, that would not have a downside that would be able to address these issues.

I have been told there is something called the ozone treatment, is one kind of treatment. Very expensive, but a treatment. There is another one, is granual activated carbon treatment. Are those things we should look at without reducing our efforts on the source side? Are those things that should be looked at on the treatment side? And what are the pluses and minuses of doing that?

Mr. BRUNHART. There is some evolving evidence on a study or two that activated carbon in combination with ozone can be somewhat effective. Fairfax is leading the way on that.

And there is also evidence that ultraviolet light treatment, ultraviolet light, UV, coupled with hydrogen peroxide dosage can be as effective as activated carbon as well. WSSC is going to—the UV treatment in Fairfax has gone to activated carbon. In other words, we are both on the cutting edge in those regards, but we need much more science to tell us what should be the effluent and for what chemicals.

Mr. VAN HOLLEN. Would those techniques be effective?

Mr. MURRAY. Yes, sir, it is. We did a survey, and 90 percent of the big-city utilities do not use these more advanced treatments. That is obviously going to have to be the long-term direction that they go. We are not arguing for one specific treatment, but there are treatments now, advanced treatments, including the Fairfax County Water Authority treatment, that can be very effective at removing a wide class or wide array of contaminants. That plus pollution prevention has to be where we go.

Chairman TOM DAVIS. Thank you.

Let me thank this panel. I mean, we are just so pleased our local utilities are here today. They are willing to answer our questions so openly. We look forward to continuing to work with you, and we appreciate all of the work you and the other panels are doing to keep our water safe for human consumption and for wildlife. We will continue to pursue this matter.

This hearing is adjourned.

[Whereupon, at 3:30 p.m., the committee was adjourned.]

[Additional information submitted for the hearing record follows:]



WASHINGTON SUBURBAN SANITARY COMMISSION

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August 23, 2006

The Honorable Barbara A. Mikulski
United States Senate
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Washington, DC 20510

Dear Senator Mikulski:

As the General Manager for the Washington Suburban Sanitary Commission (WSSC), I am writing to you to request your support for water supply funding issues important to the WSSC and water supply utilities across the State of Maryland and the nation. The WSSC is among the ten largest water and wastewater utilities in the U.S. providing safe, reliable drinking water to more than 1.6 million Marylanders. On behalf of our customers and our nation's water industry, I am concerned by the changes in federal funding priorities to maintain and upgrade our nation's critical water infrastructure that supports economic growth, protects public health and our environment, and serves our local communities. I am grateful for your ardent support in this area in the past and urge you to consider WSSC's priorities as the federal appropriations bills move to conference.

The WSSC has two important federal funding priorities at this time. First, we continue to pursue federal funding commitments to support our partnership with the federal government and fulfill our obligations of the 2005 Consent Decree. Thanks to your leadership in concert with the efforts of Congressman Steny Hoyer and the rest of the Maryland delegation, we were able to secure a STAG earmark for \$477,000 in the FY'2006 appropriations bill. We have been less fortunate this year. Neither the House nor Senate bills have included specific funding for the WSSC despite the reality that our work must continue. I urge you to consider including our funding request when HR 5286 moves forward and will make myself available to you to assist your efforts in anyway.

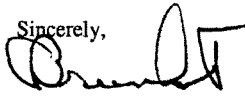
Second, I would like to pledge the WSSC's support for the American Water Works Association Research Foundation (AwwaRF) \$5 million funding request in the FY'2007 legislation. As you well know, AwwaRF is critical to our nation's water utilities by allowing us to join forces to centralize our research efforts. This research is imperative to the WSSC and our peers to safeguard public health, maintain and upgrade our aged infrastructure, and continue our environmental protection efforts, while keeping water rates affordable for our customers. Water utilities need innovative ways to respond to these challenges and the AwwaRF is the primary



The Honorable Barbara A. Mikulski
August 22, 2006
Page 2

organization leading such efforts. I ask that you and your colleagues restore past congressional support of this federal funding stream by supporting the AwwaRF's request.

I have included supplementary information regarding both of these priority requests. Should you require additional information from the WSSC, please feel free to contact me at (301) 206-8777. In addition, I have attached contact information for you and your staff for our Intergovernmental Relations Office and technical expertise. I thank you for your constant support on the important issues impacting the citizens of Maryland and assure you that the WSSC shares your great commitment. I look forward to working with you on these and other issues.

Sincerely,

Andrew D. Brunhart
General Manager

SM/MTH/as



Washington Suburban Sanitary Commission

AwwaRF Request

The American Water Works Association Research Foundation (AwwaRF) is a national research organization dedicated to developing innovative, practical and timely solutions to many challenges that water utilities across the nation face for providing safe drinking water to more than 260 million Americans in a reliable and cost effective manner.

AwwaRF research is funded by approximately 900 drinking water utilities in the U.S. (including WSSC), and approximately 100 manufacturers and consulting organizations which serve drinking water utilities and the U.S. Congress.

AwwaRF does not do research in-house. However, it has a system in place that ensures its research are focused on critical issues, are conducted by the best expertise available in the nation and are peer reviewed. AwwaRF also collaborates with more than 34 domestic and international research organizations such as the EPA, USGS, etc

By centralizing their research efforts under the umbrella of AwwaRF, utilities and other subscribers can pool their talent and efforts to focus on developing state of the art practical solutions to emerging challenges. This collaboration allows for highly cost effective and timely research efforts.

WSSC is a founding member of AwwaRF, benefits greatly from its centralized research and supports its efforts by about \$100,000 per year of subscription fee.

Water utilities and other AwwaRF subscribers provide more than 80% of the \$30 million AwwaRF budget. The utilities also support the AwwaRF by significant participation in its research efforts and by sharing, free of charge, their expertise with the research teams.

AwwaRF has received consistent support for its research efforts from the U.S. Congress through appropriations until recent years. Despite ongoing mandates handed down to utilities from the federal level, the burden of research costs to meet those regulations has shifted to the utilities and their rate payers.

Restoring federal funding through appropriations is necessary to relieve customers of the additional research dollars that will be needed to comply to federal regulations as well as updating methodologies to keep pace with science and the environment



Washington Suburban Sanitary Commission

FY 2007 Appropriations Request

WSSC Background

The Washington Suburban Sanitary Commission (Commission or WSSC), established in 1918, is a public, bi-county agency providing water and wastewater services to Montgomery and Prince George's Counties in the Washington Capital region. WSSC is governed by six Commissioners with equal representation from each county and has developed its systems to the point where it is a national leader in the water and sewerage industry. The Commission is the among the ten largest water and wastewater utilities in the country, serving approximately 1.6 million people in a 1,000 square mile service area. In addition, the Commission provides services to 26 key federal installations and facilities in the Washington area, including such important military facilities as Andrews Air Force Base; the National Imagery and Mapping Agency; the National Naval Medical Center; the Naval Surface Warfare Center; the U.S. Army Research Center. Numerous other state and local security-related installations and offices also receive service from the Commission.

Water treatment and distribution facilities operated by the Commission include three water supply reservoirs; two water filtration plants; fourteen water pumping stations; 5,100 miles of water mains; and 54 treated-water storage facilities. Water production at Commission facilities is 166 million gallons per day. In terms of wastewater facilities, the Commission operates six wastewater treatment plants; 41 wastewater pumping stations; and approximately 4,900 miles of sewer mains.

Interior and Environment Appropriations

Wastewater Infrastructure Upgrades and Improvements, Anacostia River

- **Under the EPA's State and Tribal Assistance Grant (STAG) program, funding is sought for wastewater infrastructure upgrades and improvements along the Anacostia River.**

Request: \$1,000,000

EPA STAG Program – FY 2007

Project Need and Benefits:

In order to address sanitary sewer overflow (SSO) issues for wastewater pipes along the Anacostia River, capital funding is needed to allow for the necessary inspections and monitoring to identify critical areas and then repair and upgrade pipes as needed. Upgrading key pipes along the Anacostia River will provide many environmental benefits to this critical ecosystem and riparian habitat. Furthermore, by helping to clean the Anacostia River, the water quality of the Potomac River—a key source of drinking water for the WSSC service area—will also be improved, as the Anacostia flows into the Potomac.

CRS Report for Congress

Received through the CRS Web

Environmental Protection Agency: Highlights of the President's FY2007 Request

David M. Bearden and Robert Esworthy
Resources, Science, and Industry Division

The President's FY2007 budget request includes \$7.32 billion for the Environmental Protection Agency (EPA), \$390 million less than the \$7.71 billion that Congress appropriated in FY2006. Although the President's FY2007 request for EPA is an overall decrease compared with the enacted FY2006 appropriation, funding for some agency activities would increase. Proposed changes in funding for selected activities in which there has been broad congressional interest are characterized below. The following table indicates specific amounts for EPA's eight accounts and compares the President's FY2007 request with appropriations enacted by Congress each year since FY2004.

Although the President's budget would cut funding for a number of EPA activities, most of the overall decrease is attributed to water infrastructure projects within the State and Tribal Assistance Grants (STAG) account. In particular, funding would decline for grants to states to support clean water State Revolving Funds (SRFs). States use these funds to issue low-interest loans to communities for wastewater infrastructure projects, such as upgrades for municipal sewage treatment plants. As in past Administration requests, the President's budget does not include funding in the STAG account that Congress earmarked in FY2006 for water infrastructure projects in specific communities. However, grants to states to support the drinking water SRFs would increase slightly. States use these funds to issue low-interest loans to communities for projects needed to meet federal drinking water standards and for related purposes.

The President's budget would increase funding for the Science and Technology account, which supports scientific research on human health and environmental effects of pollutants. This research is used to inform EPA decisions on preventing, regulating, and abating pollution. Funding would increase within multiple accounts for EPA's homeland security responsibilities and other ongoing activities. The President's budget also includes funding for new initiatives that focus primarily on air and water quality. Although overall funding for the Superfund account would also increase, support for actual cleanup of hazardous waste sites would decrease, and the funding would continue to come from general Treasury revenues. A trust fund supported by taxes on industry had funded most activities within this account. However, the taxing authority expired at the end of 1995, and the trust fund balance was essentially expended by the end of FY2003.

This report will be updated to track action on the FY2007 appropriations bill for Interior, Environment, and Related Agencies, which will include funding for EPA.

**Environmental Protection Agency Appropriations, by Account:
FY2004-FY2006 Enacted, and the FY2007 Request**
(in millions of dollars)

Appropriations Account	FY2004 Enacted ^a	FY2005 Enacted ^a	FY2006 Enacted ^b	FY2007 Request ^b
Science and Technology	\$781.7	\$744.1	\$730.8	\$788.3
+ transfer from Superfund account	+ \$44.4	+ \$35.8	+ \$30.2	+ \$27.8
Science and Technology Total	\$826.1	\$779.9	\$761.0	\$816.1
Environmental Programs and Management	\$2,280.0	\$2,294.9	\$2,346.7	\$2,306.6
Office of Inspector General	\$37.3	\$37.7	\$36.9	\$35.1
+ transfer from Superfund account	+ \$13.1	+ \$12.9	+ \$13.3	+ \$13.3
Office of Inspector General Total	\$50.5	\$50.6	\$50.2	\$48.4
Buildings & Facilities	\$39.8	\$41.7	\$39.6	\$39.8
Hazardous Substance Superfund (Total)	\$1,257.5	\$1,247.5	\$1,242.1	\$1,259.0
— transfer to Office of Inspector General	— \$13.1	— \$12.9	— \$13.3	— \$13.3
— transfer to Science and Technology	— \$44.4	— \$35.8	— \$30.2	— \$27.8
Hazardous Substance Superfund (Net)	\$1,200.0	\$1,198.8	\$1,198.6	\$1,217.8
Cleanup	\$875.1	\$847.7	\$833.9	\$822.9
Other Superfund Activities	\$324.9	\$351.1	\$364.7	\$395.0
Leaking Underground Storage Tank Program	\$75.6	\$69.4	\$80.0 ^c	\$72.8
Oil Spill Response	\$16.1	\$15.9	\$15.6	\$16.5
State and Tribal Assistance Grants: Total	\$3,877.8	\$3,575.3	\$3,213.7	\$2,797.4
Clean Water SRFs	\$1,342.0	\$1,091.2	\$886.8	\$687.6
Drinking Water SRFs	\$845.0	\$843.2	\$837.5	\$841.5
Other Grants	\$1,690.8	\$1,640.9	\$1,489.4	\$1,268.3
Total EPA Accounts	\$8,365.8	\$8,026.5	\$7,705.4	\$7,315.5

Source: Prepared by the Congressional Research Service (CRS) and based on sources noted below.

Note: Numbers may not add due to rounding.

- a. FY2004 enacted amounts are from the conference report on the Consolidated Appropriations Act for FY2005 (H.R. 4818, H.Rept. 108-792), which reflect an across-the-board rescission of 0.59%. FY2005 enacted amounts are from the conference report on the Interior, Environment, and Related Agencies Appropriations Act for FY2006 (H.R. 2361, H.Rept. 109-188), which reflect an across-the-board rescission of 0.80%, and supplementals.
- b. FY2006 enacted amounts and the FY2007 request are from EPA's *FY2007 Annual Performance Plan and Congressional Justification*. FY2006 enacted amounts are EPA estimates, which reflect an across-the-board rescission of 0.476% in the Interior, Environment, and Related Agencies Appropriations Act for FY2006 (P.L. 109-54), a 1% government-wide rescission in the Department of Defense Appropriations Act for FY2006 (P.L. 109-148), and EPA's distribution of \$80 million made available in P.L. 109-54 from funds rescinded from prior years not obligated for contracts, grants, and interagency agreements for which the funding authorization had expired. In past years, the House Appropriations Committee has developed its own estimates, which in some cases have differed from EPA's amounts because of different accounting adjustments. The table will be updated with the committee's estimates when they become available.
- c. Includes \$73 million in P.L. 109-54 for response to leaking underground tanks across the country and \$8 million in P.L. 109-148 for such response activities in areas damaged by Hurricanes Katrina and Rita, after applicable rescissions.

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November 30, 2006

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INDEPENDENT

The Honorable Mark Myers
Director
U.S. Geological Survey
John W. Powell Federal Building
12201 Sunrise Valley Drive
Reston, Virginia 20192

Dear Dr. Myers:

Thank you for your testimony at the October 4, 2006, House Committee on Government Reform hearing on the discovery of intersex fish in the Potomac River watershed. As the hearing highlighted, this discovery raises serious questions about the potential impact of endocrine-disrupting chemicals on the environment and the people who rely on the river for drinking water.

As we continue to explore these questions, we are interested in obtaining more detailed information on the U.S. Geological Survey's (USGS) research and other work related to endocrine disruptors.

Please provide the following information by December 21, 2006:


1. Reports of all studies performed or sponsored by USGS related to endocrine disruptors in the Potomac River watershed or, where a report is not available, a detailed summary of the study and results;
2. All data and related information from the fish-health assessments in 2003, 2004, and 2005 that led to the discovery of intersex fish in the Potomac and Shenandoah River watersheds (if USGS has conducted other related sampling, please also provide any data obtained to date);
3. All data and information obtained to date from the studies USGS is conducting with the U.S. Fish and Wildlife Service comparing caged hatchery raised bass deployed in the Monocacy River and Conococheague Creek to a control group of bass at the National Fish Health Research Laboratory;

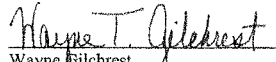
The Honorable Mark Myers
November 30, 2006
Page 2

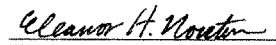
4. Descriptions and expected timing of any other ongoing or planned studies on endocrine disruptors in the Potomac River watershed and any data from those studies;
5. Any reports or other documents that discuss the implications or potential implications for fish, other wildlife, or humans of the apparent presence of endocrine disruptors in the Potomac River watershed;
6. With regard to the nationwide study USGS conducted from 1999 to 2000 on the presence in streams of certain chemicals, including suspected endocrine disruptors, please identify which chemicals were selected on the basis of the chemical having known or suspected endocrine disrupting effects;
7. Any other final reports or, where a final report was not issued, draft reports of any research related to endocrine disruptors performed or sponsored by USGS in any watershed or other environment in the United States; and
8. Descriptions and expected timing of any other ongoing or future USGS research on endocrine disruptors.

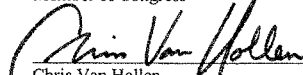
Thank you for your prompt attention to this matter.


Sincerely,



Tom Davis
Chairman
Committee on Government Reform

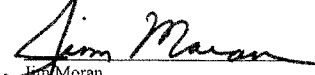

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INDEPENDENT

The Honorable H. Dale Hall
Director
U.S. Fish and Wildlife Service
1849 C Street, NW
Washington, DC 20240

Dear Mr. Hall:

On October 4, 2006, the House Committee on Government Reform held a hearing on the discovery of intersex fish in the Potomac River watershed. As the hearing highlighted, this discovery raises serious questions about the potential impact of endocrine-disrupting chemicals on the environment and the people who rely on the river for drinking water.

As we continue to explore these questions, we are interested in obtaining more detailed information on the U.S. Fish and Wildlife Service's (USFWS) research and other work related to endocrine disruptors. We are sending a similar letter to the U.S. Geological Survey (USGS) so to the extent you wish to coordinate your responses, you do not need to send duplicate copies of information provided by USGS.

Please provide the following information by December 21, 2006:

1. Reports of all studies performed or sponsored by USFWS related to endocrine disruptors in the Potomac River watershed or, where a report is not available, a detailed summary of the study and results;
2. All data and related information from the fish-health assessments in 2005 that identified the widespread occurrence of intersex fish in the Potomac and Shenandoah River watersheds (if USFWS has conducted other related sampling, please also provide any data obtained to date);
3. All data and information obtained to date from the studies USFWS is conducting comparing caged hatchery raised bass deployed in the Monocacy River and Conococheague Creek to a control group of bass at the National Fish Health Research Laboratory;

The Honorable H. Dale Hall
November 30, 2006
Page 2


4. Descriptions and expected timing of any other ongoing or planned studies on endocrine disruptors in the Potomac River watershed and any data from those studies;
5. Any reports or other documents that discuss the implications or potential implications for fish, other wildlife, or humans of the apparent presence of endocrine disruptors in the Potomac River watershed;
6. Any other reports or, where reports are not available, detailed summaries of any research related to endocrine disruptors performed or sponsored by USFWS in any watershed or other environment in the United States since 1999; and
7. Descriptions and expected timing of any other ongoing or future USFWS research on endocrine disruptors.

Thank you for your prompt attention to this matter.

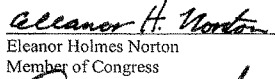
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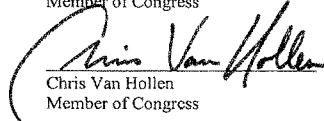
Tom Davis
Chairman
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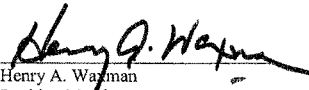
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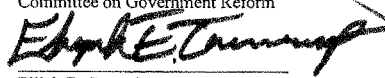
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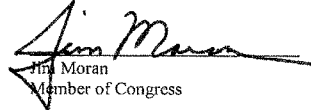
Chris Van Hollen
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December 11, 2006

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EDWARD SANDERS, VERMONT,
INDEPENDENT

The Honorable Stephen L. Johnson
Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Dear Administrator Johnson:

We are writing to express our concern and request additional information about the discovery of intersex bass fish in the Potomac River, a primary drinking water source for the Washington metropolitan region. Specifically, we are inquiring about EPA's research and regulatory response to the increasing environmental presence of endocrine disrupting chemicals, as such chemicals are believed to be causing the effects on the Potomac bass and pose potentially serious risks for human health and the environment.

As you know, the House Committee on Government Reform held a hearing on this topic on October 4, 2006, at which Assistant Administrator Ben Grumbles testified for EPA. While we appreciate Mr. Grumbles' testimony, it left many questions unanswered. In particular, we continue to have strong concerns about the slow pace of EPA's efforts to establish a screening program for suspected endocrine disrupting chemicals and the adequacy of regulatory efforts to protect public health and the environment from these chemicals.

I. Status of the Endocrine Disruptor Screening Program

In 1996, Congress directed EPA to develop and implement a screening program for possible endocrine disrupting chemicals. Under the Food Quality Protection Act and the Safe Drinking Water Act, EPA was required to develop and validate testing methods by 1998 and to begin screening chemicals by 1999. The FQPA also directed EPA to take regulatory action as necessary based on the results of the screening.

Ten years after the law's passage, EPA has not finished developing the screening program and has not screened any chemicals. At the hearing, Mr. Grumbles testified that EPA is using best efforts to finish validation of the screening tests and to begin testing. However, the nature of those efforts remains unclear and the pace slow, which is of concern given the increasing environmental presence of endocrine disruptors and their potentially serious effects on

The Honorable Stephen L. Johnson
December 11, 2006
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human and animal health. Based on this concern, we have the following questions about the screening program:

1. In his testimony, Mr. Grumbles outlined EPA's research strategy in the area of endocrine disruption and articulated three research goals: (1) support the agency's screening and testing program; (2) improve understanding of the underlying science to help the agency integrate data on endocrine disruptors into risk assessments; and (3) identify potential sources of endocrine disruptors in the environment. With respect to each of these goals, please describe ongoing and planned research activities. What are the specific goals, methods, time frames and funding levels for each of these activities?
2. Out of the roughly 87,000 chemicals in commercial use, how many are known endocrine disruptors? On what scientific basis were these identified as endocrine disruptors? Of the 87,000, how many are suspected or possible endocrine disruptors? Another witness at the hearing, Erik Olson of the Natural Resources Defense Council (NRDC), stated that the vast majority of the chemicals in commercial use have never been tested for endocrine disrupting effects. Does EPA agree with that characterization?
3. Are any toxic metals (e.g., lead and mercury) considered endocrine disruptors?
4. What household or other products regularly used by consumers contain known or suspected endocrine disrupting chemicals?
5. Mr. Grumbles testified that EPA expects to begin initial screening under the endocrine disruptor screening program by the end of 2007. When it begins, who will conduct the screening? How will the screening program be organized, i.e., by individual chemical, by groups of chemicals, by chemical compounds, etc.? What is the anticipated completion date for: (a) the initial round of chemicals to be screened; and (b) all of the existing chemicals described under the relevant provisions of the FQPA and SDWA (i.e., all pesticides, all chemicals possibly found in drinking water)?
6. During the hearing, Congressman Van Hollen asked Mr. Grumbles whether EPA had identified the list of chemicals that it intends to screen. Mr. Grumbles indicated that EPA had identified some priorities for screening and promised to provide the Committee with the list that EPA has compiled thus far. Please provide this list of priority screening. Also, on what basis are these screening priorities determined?
7. EPA's website indicates that, as of last year, EPA planned to identify 50 to 100 chemicals for an initial round of screening, and then identify additional chemicals for subsequent rounds of screening. Have these lists been compiled? If so, please provide these lists. If not, when is the expected completion date for those lists?

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8. Which commercial chemicals are most prevalent in the surface waters in the Potomac River watershed? Which are most prevalent nationally? What effect does prevalence have on EPA's determination of screening priority?

9. Mr. Grumbles testified EPA "will work harder and faster in making more progress" to develop and implement a screening program. He also stated that a research priority for EPA is "to carry out more field studies and lab work on the causes and effects and occurrence of these endocrine disrupting chemicals and to develop better technologies so that they can be treated, and the potential for harm is reduced dramatically." Please provide information about these new research activities and any other specific efforts aimed at accelerating the pace of program development and implementation.

II. Status of Regulatory Efforts to Protect Public Health and the Environment

In his testimony, Mr. Grumbles indicated that while EPA has not yet implemented the endocrine disruptor screening program, the agency is using existing programs to reduce risks from endocrine disrupting pesticides. Mr. Grumbles discussed EPA's regulatory activities related to endocrine disruptors under the Clean Water Act, the Safe Drinking Water Act, the Federal Insecticide, Fungicide and Rodenticide Act, as amended by the Food Quality Protection Act, and the Toxic Substances Control Act. However, it is unclear how comprehensive or effective these efforts have been to date. It is also unclear what EPA is doing to address risks from endocrine disrupting chemicals used in products other than pesticides, such as pharmaceuticals, personal care products, plastics, and other industrial products and processes.

A. Clean Water Act

With respect to the Clean Water Act, Mr. Grumbles noted that EPA has set 120 recommended human health water quality criteria and 45 recommended aquatic life criteria for specific chemicals or classes of chemicals and that two recently issued criteria are directly linked to reproductive and developmental impacts. It is not clear to what degree endocrine disrupting effects were considered when setting the other water quality criteria and to what degree they actually protect human health from such effects. We have the following questions about EPA's actions under the Clean Water Act:

10. In briefing our staff on this issue, EPA staff stated that the human health water quality criteria protect against recreational exposure to a chemical but not against exposure through other routes, e.g., ingestion of drinking water. However, Mr. Grumbles testified that in setting human health criteria, EPA does evaluate potential exposure routes such as direct ingestion of drinking water. Please clarify.

11. How many of the 120 existing recommended human health water quality criteria and 45 recommended aquatic life criteria for specific chemicals or classes of chemicals were set based

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in full or in part on studies evaluating the endocrine disrupting effects of the chemicals or classes of chemicals? For those that were established based in full or in part on such studies, please list the chemicals or classes of chemicals and the relevant water quality criteria.

12. Mr. Grumbles' testimony stated that EPA is working on better understanding the prevalence of pharmaceuticals in waters and plans to complete sampling of fish by mid-2007 and produce a report by the end of 2007. Once EPA completes the report, if it finds that pharmaceuticals with endocrine disrupting effects are present in fish tissues at levels that raise concerns, how will EPA address this issue and in accordance with what timing and statutory authority?

B. Safe Drinking Water Act

Mr. Grumbles' testimony stated that EPA has issued 13 public health advisories under the Safe Drinking Water Act that are associated with reproductive and developmental endpoints. Such advisories are not regulations; they generally recommend, but do not require, action to avoid exposure that may cause health concerns. Based on preliminary information provided by EPA to our staff, it appears that five of those advisories relate to chemicals for which EPA has also issued a maximum contaminant level goal (MCLG). We have the following questions about EPA's actions under the Safe Drinking Water Act:

13. Please identify the chemicals associated with the 13 public health advisories referenced, the date and geographical scope of the advisories, and any action recommended under each.

14. Mr. Grumbles' testimony stated that EPA has set 11 MCLGs that are associated with reproductive and developmental endpoints. Please identify these chemicals and the MCL and MCLG for each along with the date that each MCL and MCLG was issued. Also, please clarify whether any of the MCLs or MCLGs were set based on studies evaluating the endocrine disrupting effects of the chemicals or classes of chemicals.

15. Mr. Grumbles' testimony indicated that, at this time, there are enforceable drinking water standards established at levels specifically aimed at protecting against reproductive or developmental effects in humans for, at most, 11 chemicals. EPA argues that drinking water standards designed to protect against other effects not caused by endocrine disruption (e.g., cancer that is caused by another mechanism) may also protect against endocrine disrupting effects. However, Mr. Olson testified that endocrine disrupting chemicals can have effects at extremely low doses, in the parts-per-billion or parts-per-trillion range, and, unlike other toxic chemicals, the effect of endocrine disruptors often depends more on the timing of exposure than on the dose. Does EPA agree that endocrine disruptors can have effects at extremely low doses, in the parts-per-billion or parts-per-trillion range, unlike other toxic chemicals? Does EPA agree that the effect of endocrine disruptors often depends more on the timing of exposure than on the dose? If not, why not? If so, would EPA agree with the conclusion that current drinking water

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standards designed to protect against other mechanisms of harm are generally unlikely to protect against endocrine disrupting effects? If not, why not?

16. Mr. Grumbles pointed to the six year review process as EPA's mechanism for reviewing existing drinking water standards and strengthening them, if necessary, to reflect developments in the science. His testimony stated that EPA reviewed 69 standards in 2003 and nominated several for new health risk assessments due in part to new information on reproductive or developmental effects. What is the status of this review process? Please identify the standards that EPA nominated in 2003 in part due to reproductive or developmental effects and indicate for each whether EPA has completed the new health risk assessment, what the new assessments found, and whether EPA has revised the standards to reflect the new information. Where EPA has not yet revised the standard, please state EPA's expected timeframe for completion or why EPA has chosen to not revise the standard.

17. What is the current status of EPA's review of the remainder of the drinking water standards under the six year review process?

18. Regarding currently unregulated drinking water contaminants, Mr. Grumbles pointed to EPA's contaminant candidate listing (CCL) process, which EPA uses to identify unregulated contaminants that occur in drinking water and that may need to be controlled. Mr. Grumbles stated that, to date, EPA has published two CCL lists and is working on a third. What have been the results of this process as it relates to protecting against endocrine disrupting chemicals? Please list any endocrine disrupting chemicals included on either of the two CCL lists that EPA has published, and indicate whether EPA has regulated or is in the process of regulating any of those endocrine disrupting chemicals listed. If EPA is in the process of regulating such chemicals, when will EPA finalize the regulations? When will EPA publish the third CCL list, and when does EPA expect to complete the regulatory evaluation of chemicals on the third list?

19. Of the 87,000 chemicals in commercial use, how many (by amount or percentage) of those are found in drinking water, and how many (by amount or percentage) does EPA (or other authorities) currently test?

C. Federal Insecticide, Fungicide and Rodenticide Act, and the Food Quality Protection Act

Mr. Grumbles testified that EPA has a "robust review process" under FIFRA for new chemicals that are pesticides. He stated that EPA evaluates the likelihood of new pesticides causing reproductive impacts to humans and fish and wildlife, and acts to reduce risks where the pesticides are found to pose "unacceptable risks." He further stated that EPA's review process includes an evaluation of the likelihood of new compounds causing reproductive impacts to humans and fish and wildlife. We have the following questions about EPA's actions under FIFRA:

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20. Since 1996, how many new pesticides has EPA reviewed under FIFRA? Did this review process consider peer-reviewed, published studies of the pesticide's potential endocrine disrupting effects? Did any these reviews result in EPA imposing a labeling requirement restricting use of the pesticide?

21. Mr. Grumbles testified that EPA's Office of Pesticide Programs requires pesticide companies to test food use pesticides for adverse developmental and reproductive effects, and to evaluate pesticides for a range of effects on aquatic life. He further stated that EPA is required to periodically re-examine its previous safety findings to reflect new data. Where EPA has considered studies on the potential endocrine disrupting effects of pesticides currently on the market, has EPA set labeling requirements for use of these pesticides after this consideration?

2. What is the status of EPA's efforts to re-examine previous pesticide safety findings to reflect new data, including data on endocrine disrupting effects? Specifically, in completing its review of pesticide tolerances for existing pesticides, did EPA consider studies on the 'pesticides' potential endocrine disrupting effects, and, if so, for which pesticides? Regarding labeling requirements for existing pesticides, for how many pesticides has EPA established labeling requirements, and how many of these requirements has EPA reviewed since 1996? For how many and which of these reviews did EPA consider studies on the pesticide's potential endocrine disrupting effects?

D. Toxic Substances Control Act

For new chemicals used for purposes other than as pesticides, Mr. Grumbles discussed what he characterized as EPA's "robust review process" under the Toxic Substances Control Act, which he said includes an evaluation of the likelihood of the chemicals causing reproductive impacts to humans and to fish and wildlife. Last year, GAO found that "EPA's reviews of new chemicals provide limited assurance that health and environmental risks are identified before the chemicals enter commerce."¹ We have the following questions about EPA's actions under TSCA:

23. How many new chemicals or compounds (other than those considered pesticides) have been introduced into use in the United States since 1996 and reviewed by EPA under TSCA's process for reviewing new chemicals?

24. In its report last year, GAO noted that absent an EPA rulemaking to require testing of a chemical, "TSCA does not require chemical companies to test new chemicals for toxicity and to gauge exposure levels before they are submitted for EPA's review and, according to EPA

¹ GAO, *Chemical Regulation: Options Exist to Improve EPA's Ability to Assess Health Risks and Manage Its Chemical Review Program* (June 2005) (GAO-05-458).

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officials, chemical companies typically do not voluntarily perform such testing.”² GAO found that in the absence of test data, “EPA largely relies on scientific models to screen new chemicals,” in which EPA compares the new chemical to ones with similar molecular structures for which toxicity information is available.³ In reviewing new chemicals under TSCA since 1996, for how many of these new chemicals did EPA have access to test data on the chemical’s toxicity as it relates to health and environmental effects (as opposed to data based on scientific models)? Does EPA believe that a modeling-based approach is sufficient to screen for potential endocrine disrupting effects?

25. In how many and in which of these reviews of new chemicals under TSCA since 1996 did EPA explicitly consider the chemical’s potential endocrine disrupting effects? For these reviews did EPA evaluate peer-reviewed, published studies of the chemical’s potential endocrine disrupting effects, and, if not, why not?

26. Please identify any “regulatory action to reduce risks or prevent releases” that EPA has taken under TSCA for each new chemical or compound found to potentially cause endocrine disrupting effects.

27. Of the chemicals subject to regulation under TSCA that are currently in use, how many have been tested to determine their potential to cause endocrine disrupting effects? For how many of these has EPA taken action to protect against endocrine disrupting effects, and what was the date and scope of EPA’s regulatory response?

III. Drinking Water Treatment Options and Capabilities

Mr. Grumbles testified that certain types of water treatment systems may remove some level of contaminants with reproductive or developmental effects. Specifically, he cited systems using powdered carbon, ozone, ultraviolet light, or chlorine. Mr. Olson, however, stated that standard treatment technologies, including chlorine, are not very effective at removing most synthetic chemicals, toxic heavy metals, or many radioactive contaminants. Mr. Olson also testified that while a combination of ozone and granular activated carbon “is capable of reducing most synthetic organic chemicals to extremely low levels,” less than 10 percent of city water supply systems use these modern treatment technologies. We have the following questions about these treatment issues:

28. Please discuss EPA’s understanding of the efficacy of various treatment technologies regarding chemicals or classes of chemicals that are known or suspected endocrine disruptors. Please identify the studies and their sources on which this understanding is based.

² *Id.* at 3.

³ *Id.* at 10.

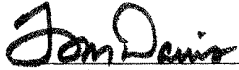
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29. Would EPA agree or disagree with NRDC's assessment that less than 10 percent of city water supply systems use modern treatment technologies (e.g., granular activated carbon, ozone, and ultraviolet light)?

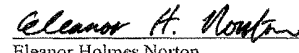
30. Does EPA believe it has sufficient information to assess and confirm the reliability of current drinking water treatment systems to effectively reduce endocrine disrupting chemicals in our drinking water supplies to safe levels?

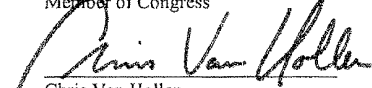
Thank you for your prompt attention to this matter. Please provide your response no later than December 22, 2006.


Sincerely,


Tom Davis
Chairman
Committee on Government Reform



Wayne Gilchrest
Member of Congress


Eleanor Holmes Norton
Member of Congress


Chris Van Hollen
Member of Congress


Henry A. Waxman
Ranking Member
Committee on Government Reform


Elijah E. Cummings
Member of Congress


Jim Moran
Member of Congress