POISONED WATERS

TRANSCRIPT

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ANNOUNCER: Puget Sound, Chesapeake Bay- they are America's great coastal estuaries, and they are in peril.

KATHY FLETCHER, People for Puget Sound: I would put Puget Sound in the intensive care unit. The situation is critical.

WILL BAKER, Chesapeake Bay Foundation: The Chesapeake Bay is like the canary in the coal mine. It is an indicator of what we are now learning to expect in any body of water across the planet.

ANNOUNCER: Three decades after the Clean Water Act, FRONTLINE takes a hard look at why America has failed for so long to clean up the nation's waterways-

J. CHARLES FOX, EPA Asst. Administrator, 1998-'01: Agriculture is by far the largest source of pollution to all of the waters in the country.

EXPERT: We're not talking about little Ma and Pa on the farm anymore. We are talking about industrial production. It is industrial waste.

ANNOUNCER: And how contaminated waters threaten not only wildlife-

ROBERT LAWRENCE, M.D., Johns Hopkins School of Public Health: You have frogs with six legs, male frogs with ovaries-

ANNOUNCER: -but ultimately threaten our own health, as well.

EXPERT: The same things that are killing animals will kill people, too.

ANNOUNCER: In a two-hour special report, FRONTLINE correspondent Hedrick Smith uncovers the danger to the nation's waterways, tracking new threats-

HEDRICK SMITH, Correspondent: If you were living in Washington, D.C., would you drink water coming out of the Potomac?

VICKI BLAZER, U.S. Geological Survey: Probably not.

ANNOUNCER: -confronting new challenges-

HEDRICK SMITH: This is sick?

MIKE RACINE, Wash. Scuba Divers Assn.: This is sick!

EXPERT: It's like a cancer. It's growing.

ANNOUNCER: -and discovering the ultimate problem.

JAY MANNING, Director, Wash. Dept. of Ecology: It's about the way we all live. And unfortunately, we are all polluters. I am. You are. All of us are.

ANNOUNCER: Tonight, FRONTLINE investigates what's poisoning America's waters.

HEDRICK SMITH, Correspondent: [*voice-over*] The Chesapeake Bay at dawn, one of those magical moments when you feel at peace and in harmony with nature. For me, the Chesapeake is a special place, an extraordinary natural treasure. Over the past 30 years, I've spent a lot of time on the bay, sailing, hiking, swimming, crabbing. I love the water, its calm, its beauty, its majesty, and I'm fascinated by its meandering shorelines.

In the early morning light, the bay can look so pure and pristine. But that's deceiving. I know that like most of America's waterways, Chesapeake Bay is in trouble despite years of trying to save it, and that worries me.

I wanted a firsthand look, and so I headed out on the water with Larry Simns, a waterman who's been commercially fishing the bay for 60 years.

LARRY SIMNS, Waterman: In its peak time, if you drained the bay, the crabs and the fish and oysters and everything would probably be 10 foot deep on the bottom all over the whole bay.

HEDRICK SMITH: Over the past several decades, Simns has watched the good times of bountiful harvests slip away.

[*on camera*] It's about like your home waters here.

LARRY SIMNS: Yeah.

HEDRICK SMITH: Huh?

LARRY SIMNS: Yeah.

HEDRICK SMITH: What is the Chesapeake Bay like today for watermen?

LARRY SIMNS: The only thing that we have in abundance that we had back then was the striped bass, the rockfish. Other than that, everything else is diminished. The oysters, we used to catch two million bushel a year. Now we catch a hundred thousand bushel. I never, ever dreamed that I wouldn't be catching shad anymore, I wouldn't be catching yellow perch anymore, I wouldn't be catching tarpon anymore. I never, ever dreamed that that would come to an end.

HEDRICK SMITH: [*voice-over*] Simns took me to the old fishing town of Rock Hall, where watermen were bringing in the day's crab catch. Crabs have long been the trademark of Chesapeake Bay, but the catch is now down more than 50 percent from 25 years ago.

[*on camera*] So how was the catch today?

DAVID KIRWAN, Crabber: Well, it dropped off a little bit today.

HEDRICK SMITH: Dropped off. So what are you coming in with, six, seven, eight bushels?

DAVID KIRWAN: I think it was nine altogether.

HEDRICK SMITH: Nine bushels? Ten years ago, how many would you have caught on an average day?

DAVID KIRWAN: Be about 30.

HEDRICK SMITH: About 30 bushels, about three times as many.

DAVID KIRWAN: Yeah.

HEDRICK SMITH: How do you feel about the bay and what's happened to it?

DAVID KIRWAN: I think it's a tragedy. I think- a little upset that my children can't enjoy this way of life that I cherish, you know?

LARRY SIMNS: In Rock Hall harbor, all that used to be processing houses for striped bass, for oysters, for clams, for everything that we was harvesting.

HEDRICK SMITH: So a lot of people in the fish and crab and oyster business went out of business.

LARRY SIMNS: Yeah.

TOM HORTON, Bay Author and Reporter: You're talking about billions of dollars of economic impact with oysters, crabs, shad, striped bass. The decline in the fisheries has just been dramatic. I wouldn't have thought even 10 or 15 years ago that we would literally lose oysters as a commercial fishery. We have. It's done.

HEDRICK SMITH: [*voice-over*] Watermen are seeing the symptoms of decline, but the deeper problem, I learned, is that the very dynamics of the bay's ecosystem are being fundamentally altered by human impact. The bay is acutely vulnerable because its watershed is so large, 11,000 miles of shoreline, and it drains big rivers from six states.

TOM HORTON: In all of North America, it's the largest estuary. We're talking a sixth of the East Coast, from Cooperstown, New York, out into West Virginia, almost down to North Carolina.

HEDRICK SMITH: It is the receptacle of an enormous volume of water in a uniquely shallow basin. Its average depth is only 21 feet, making the bay an ecological hothouse.

TOM HORTON: It's fabulously productive but also exquisitely vulnerable to land use because it has a huge drainage basin. So you have, you know, the classic place for trying to determine whether humans and nature can coexist.

HEDRICK SMITH: One problem for Chesapeake Bay is that humans have drastically overfished the resources, especially crabs. But scientists have also tied the dramatic decline in fisheries here to man-made pollution and a growing phenomenon called "dead zones."

TOM HORTON: Dead zones happen when too much fertilizer - nitrogen, phosphorous - comes in. It grows lots of excess algae. The algae die, decompose, suck up the oxygen from the deeper waters, which aquatic life needs to live.

HEDRICK SMITH: This is what a healthy, oxygen-rich bay bottom looks like, full of lush grasses where fish and crabs can grow. A dead zone is completely different, barren and empty.

HOWARD ERNST, Bay Historian: The bottom of the bay, when there's an algae bloom or when you have a dead zone, is as dead as the face of the moon. There is absolutely no oxygen in these dead zones, and nothing can grow that requires oxygen for survival.

HEDRICK SMITH: [*on camera*] Crabs can't make it? Fish can't-

HOWARD ERNST: Crabs can't make it. Oysters can't make it. Fish that get caught in the dead zone will literally die if they can't get out of the dead zone. They'll float up to the surface. Their bellies will explode. And you'll see fish kills throughout the Chesapeake Bay.

HEDRICK SMITH: [*voice-over*] In the heat of summer, dead zones now occupy as much as 40 percent of the main stem of the Chesapeake Bay. But it's not just a bay-wide problem, it's worldwide. All across the planet, dead zones have been doubling in frequency and size every decade. There's one in the Gulf of Mexico the size of the state of Massachusetts.

[*www.pbs.org: More about dead zones*]

Pollution is not just creating dead zones, it's playing havoc with human health and recreation.

NEWSCASTER: -and those health advisories at Sandy Point Beach are still in effect and will be-

HEDRICK SMITH: Every year, more beaches have to close periodically because of pollution.

NEWSCASTER: People are urged to avoid direct contact with the water on the east-

J. CHARLES FOX, EPA Asst. Administrator, 1998-'01: The unfortunate reality is that people get sick from contact with water every single day, and we have information suggesting that that problem is getting worse today than it was 10 years ago. And this is a result of a number of different contaminants being in the water that ultimately can make people sick.

WILL BAKER, Chesapeake Bay Foundation: Today we're at a point at which this system called the Chesapeake Bay may be on the verge of ceasing to function in its most basic capacities. And what do I mean by that? Providing a place for people to swim - recreation - providing a source of seafood - shellfish, finfish, oysters, crabs - underwater grasses which support the crab population - and being a system that is absolutely wonderful to look at, to support tourism, to be a source of real pride to the region.

We are at the verge where all of those functions of the Chesapeake Bay that we value could be lost to the next generation unless we take dramatic and fundamental action today.

HEDRICK SMITH: What leaves the bay's defenders distraught is not only its perilous condition but the public's evident loss of interest and the failure of federal and state governments to stick to their repeated promises over the past 25 years to clean up the bay.

J. CHARLES FOX: There has been so much investment in science and in modeling and in monitoring. We know today precisely what is necessary to save the Chesapeake, and now it's very clear that it comes down to the question of political will.

TOM HORTON: You know, there's a tendency to blame it on lack of political will. Well, hell, who elects the politicians and who reelects them? Last time I looked, it was us. We ran out of excuses for delaying many, many years ago around the Chesapeake. We can afford it. We don't necessarily want to pay for it, but we can afford it. So I have to say that, collectively, we don't care enough.

HEDRICK SMITH: There was a time when we as a nation did care enough to demand action, four decades ago, when the country was rocked by a series of environmental disasters.

ROBERT F. KENNEDY, Jr., Waterkeeper Alliance: Well, I remember what it was like before Earth Day. I remember when the Cuyahoga River burned with flames that were eight stories high. I remember when- the Santa Barbara oil spill in 1969 that closed virtually all the beaches in southern California. I remember when they declared Lake Erie dead. I remember that I couldn't swim in the Hudson or the Charles or the Potomac when I was growing up.

HEDRICK SMITH: We could see the pollution, smell it, even touch it. The problem was in our faces, and the public demand for action exploded on Earth Day.

ROBERT KENNEDY, Jr.: In 1970, this accumulation of insults drove 20 million Americans out onto the street, 10 percent of our population, the largest public demonstration in American history.

WILL BAKER: There was anger at the state of the world, at the state of your own back yard, whether it be a water body or the air or your mountain range, whatever it was you related to as the environment. There was anger that we as a country had let it go, and there was very much of a grass roots rebellion saying this has got to stop.

WILLIAM RUCKELSHAUS, EPA Administrator, 1970-'73: It was a big issue. It exploded on the country. It forced the a Republican administration and a president which had never really- he had never thought about this very much, President Nixon- it forced him to deal with it because public- the public said, "This is intolerable. We've got to do something about it."

HEDRICK SMITH: Responding to congressional pressure, Nixon created the Environmental Protection Agency. He picked Bill Ruckelshaus, a Justice Department lawyer with a solid Republican pedigree, as its first administrator, and Ruckleshaus quickly took charge.

WILLIAM RUCKELSHAUS: We had to select some big, visible polluters, both industrial and municipal, go after them, make sure the public understood we were being responsive to their concerns, and that would energize the agency and get us in a position to do things that needed to be done in order to address the problem.

HEDRICK SMITH: Congress armed Ruckelshaus and the EPA with a raft of new environmental laws, like the Clean Water Act, that imposed strict pollution limits and penalties for violators. The act called for America's waterways to be fishable and swimmable again by 1983. It had strong bipartisan support in Congress, but not, it turns out, from President Nixon.

LEON BILLINGS, U.S. Senate staff, 1966-'80: When we finally passed the Clean Water Act in the Senate and the House,

Nixon vetoed it. And for the first time in the Nixon administration, he had a veto overridden, substantially and significantly.

HEDRICK SMITH: [*on camera*] And what does that say, Nixon was out of step with the country, Nixon didn't care about the problem?

LEON BILLINGS: It was my impression- and I'm a Democrat, so I've got to be forgiven for that, but it was my impression that Nixon's interest in the environment was strictly political.

WILLIAM RUCKELSHAUS: He didn't know much about the environment, and frankly, he wasn't very curious about it. He never asked me the whole time I was at EPA, "Is the air really dirty? Is something wrong with the water? What are we worried about here?" He would warn me. He said, "You've got to be worried about that"- "eh-pa." He called it "eh-pa." He was the only one person in the country that called it "eh-pa." Everybody else in the country-

HEDRICK SMITH: [*on camera*] EPA-

WILLIAM RUCKELSHAUS: EPA. He'd call it "eh-pa." And he said, "Those people over there- now, don't get captured by that bureaucracy."

HEDRICK SMITH: [*voice-over*] But with bipartisan backing in Congress, Ruckelshaus took strong action anyway. He banned DDT, imposed a tight deadline for reducing auto emissions, sued several cities and big steel and chemical companies for polluting the air and water. His tough approach made enemies.

WILLIAM RUCKELSHAUS: Most of the people running big American manufacturing facilities in those days believed this was all a fad, it was going to go away, and and all they had to do was sort of hunker down until the public opinion subsided, public concern subsided, and it would go away.

HEDRICK SMITH: [*on camera*] When you went after the big polluters, you sued them, you took them to court, what was the reaction of U.S. Steel?

WILLIAM RUCKELSHAUS: Oh, boy, they didn't like it. I remember going up to see Ed Cott, who was the CEO of U.S. Steel, he told me, he said, "You know we don't like you very much." And he said, "We don't- we certainly don't like your agency." And I said, "Well, if that's your attitude, then we're probably going to get into a fight over it."

HEDRICK SMITH: So you had to enforce the law. You had to be a tough regulator.

WILLIAM RUCKELSHAUS: That's right. You had to reassure the public that this was a problem the government was taking seriously. We had to be tough. We had to issue standards and we had to enforce them.

[*www.pbs.org: Read the Ruckleshaus interview*]

HEDRICK SMITH: [*voice-over*] One of the first big regulatory success stories came right here on the Potomac River.

J. CHARLES FOX, EPA Asst. Administrator, 1998-'01: The Potomac River goes up to the mountains of Appalachia. It comes past our nation's capital, and then it enters the estuary of the Chesapeake Bay. And what we saw in the Potomac River in the l960s was what was seen in many rivers around the country, where it smelled so bad, you didn't want to get anywhere near it. And that odor was in large part created by poorly treated sewage.

WILL BAKER, Chesapeake Bay Foundation: If you were out sailing in a small boat and capsized, you had to go in and get a shot or two. I mean, it was literally hazardous to your health to come in contact with the water.

HEDRICK SMITH: Restoring the Potomac meant modernizing the sewage treatment plants along the river like this one, called Blue Plains, just south of Washington. Blue Plains handles the waste of two million people and it embodies just the kind of pollution targeted by the Clean Water Act, pollution coming out of a pipe. And in the 1970s, Blue Plains was the biggest single source of pollution to the Potomac.

CLIFF RANDALL, Wastewater Scientist: Blue Plains was the key wastewater treatment plant that had to be modified if we were really going to make a good effort at restoring the water quality in both the river and in the bay.

HEDRICK SMITH: The Potomac had become overrun with acres of green algae caused by excess nutrients from human waste, like phosphorous and nitrogen.

CLIFF RANDALL: The regulators said, "OK, phosphorus is the problem in the Potomac. Therefore, you people running the wastewater treatment plants will upgrade to remove phosphorus." And it happened in a very short period of time.

HEDRICK SMITH: But the river didn't improve all that much. It turned out that they needed to remove nitrogen, too, a

costly process. But Cliff Randall found an answer, a new, more economical technology called biological nutrient removal, or BNR.

CLIFF RANDALL: The way we treat sewage is we take in the sewage and we feed it to a large mass of bacteria and other microorganisms, and basically, they eat the sewage.

HEDRICK SMITH: [*on camera*] They eat the sewage.

CLIFF RANDALL: That's correct.

HEDRICK SMITH: Munch, munch, munch.

CLIFF RANDALL: That's right.

HEDRICK SMITH: [*voice-over*] It took a billion dollars in federal and state funds to modernize Blue Plains with several new technologies, including BNR, but the effort paid off. And more than 100 sewage treatment plants around the bay adopted BNR technology.

[*on camera*] How much of these early gains were not only the result of technology but of a pretty tough regulatory stick from the EPA and the state governments?

TOM HORTON, Bay Author and Reporter: Well, you know, that was a tried and true formula. I mean, with sewage treatment, where we made the biggest gains early on and continue to make the biggest gains, you have very clear laws. You have penalties. You have deadlines. You have enforcement. You have inspection. I mean, we know what works.

HEDRICK SMITH: [*voice-over*] But the 1980s brought a new era, and the political climate on the environment changed. The winds of deregulation were blowing through Washington, especially during the Reagan years.

Pres. RONALD REAGAN: [*January 20, 1981*] It is time to check and reverse the growth of government, which shows signs of having grown beyond the consent of the governed. It is my intention to curb the size and influence of the federal establishment.

J. CHARLES FOX, EPA Asst. Administrator, 1998-'01: There's no question that the Reagan administration, in fact, brought to Washington a deregulatory agenda. I remember back in the Reagan days of seeing memos that would come out from the White House to the Chamber of Commerce and other big businesses, asking them for a list of regulations from which they would want relief.

HEDRICK SMITH: Environmental regulation was a prime target of the Reagan White House for giving relief to American business.

LEON BILLINGS, U.S. Senate staff, 1966-'80: The Reagan administration essentially gutted the EPA. They stopped it in its tracks for a period of six, seven years. Reagan and his White House appointed people to run the Environmental Protection Agency who were flat-out opposed to the mission of the agency and were set to undo that mission.

HEDRICK SMITH: The Reagan administration not only handcuffed EPA on enforcement, it shifted to a new strategy of voluntary compliance, a strategy typified by the Reagan EPA's new program for Chesapeake Bay.

HOWARD ERNST, Bay Historian: What we created in the Chesapeake Bay was a grand experiment. It was going to be an alternative to the regulatory approach that had swept the EPA, that had swept the federal system. They were going to try to do this in a non-regulatory, cooperative manner,

HEDRICK SMITH: The new approach was long on promises and targets but short on hard deadlines and clear accountability.

LEON BILLINGS: It is a voluntary program. You are never going to effectively deal with a multi-state pollution problem with a voluntary program.

HEDRICK SMITH: The result was the Chesapeake Bay program repeatedly missed its targets, leaving unfulfilled the Clean Water Act's promise to radically reduce water pollution.

I saw the consequences of how deregulation has played out here on the Chesapeake Bay's Eastern Shore, where huge factory-scale farms now dominate the landscape and where half the pollution flowing into the bay, much of it from agriculture, remains essentially unregulated.

I had come here to meet Rick Dove, a professional photographer and environmental consultant, who under the

authority of the Clean Water Act has been gathering information for a potential citizens' lawsuit against agricultural polluters. Dove took me up on a small plane and gave me a bird's-eye view of his detective work on the Chesapeake Bay watershed.

[*on camera*] You can actually get a really clear picture up here. It's almost like a diagram up here, looking at it.

RICK DOVE, Waterkeeper Alliance: That's one of the interesting things about flying, and that is that there are no "No trespassing" signs. You can look straight down and you can see everything you need to see. You can document it and-

HEDRICK SMITH: [*voice-over*] Dove is investigating the pollution from big chicken farms. As we fly, he points out rows of long, flat sheds, each a couple of hundred yards long, each holding up to 40,000 chickens.

RICK DOVE: No matter where you fly on the Eastern Shore, it's loaded with these chicken farms.

HEDRICK SMITH: The problem is, where there are chickens, there's manure.

RICK DOVE: We know there's bad stuff in poultry waste. Once it gets in those ditches and once those ditches begin to flow down to all these rivers on the Eastern Shore, it's on its way to the bay. These rivers are delivery systems. Whatever nutrients are flowing in that river are being delivered to the bay.

HEDRICK SMITH: Chicken manure is loaded with nutrients like nitrogen and phosphorous. Remember the dead zones in the bay? They were caused by algae, which is fed by nitrogen and phosphorous.

RICK DOVE: We'll shoot 400, 500, 600 pictures in an afternoon. And we're going to blow them up and we're going to take a look at all the details because that's how you really are able to identify exactly how that poultry waste is leaving that farm and getting to the bay. Today, some of the pictures I took, we're going to go to the site and we're going to see that on the ground.

HEDRICK SMITH: The aerial photos lead Dove to a chicken farm he's been watching for more than a year.

[*on camera*] That's Lessig up there?

RICK DOVE: Yes, it is. That's Lessig's Farm right there. Those four barns on the right are the original barns, and in the last year, he's added these two on the end over here.

HEDRICK SMITH: That's a pretty big place. So we are talking 240,00, 250,000 chickens there at any one time.

[*voice-over*] Dove can check on farm run-off from public roadways, and the photos give him a clear map of how polluted rainwater moves from the farm to the bay.

RICK DOVE: This is the Lessig Farm. This is animal waste, poultry litter.

HEDRICK SMITH: [*on camera*] Big piles of it.

RICK DOVE: Yeah, it is a big pile. But what's really alarming about this is you can see what's happened when it's rained. All of this water has collected around it and it has formed some leachate. And you can see how this leachate is running down alongside, in between these barns.

HEDRICK SMITH: With all the stuff in it.

RICK DOVE: With whatever it's collected from that poultry waste. It comes out of these pipes here, comes in there, comes over to here, and then it goes under the road and right on down to the Minocan River and right on out to the bay.

HEDRICK SMITH: Wow. And have you tested this water right here?

RICK DOVE: This is where we've tested- here, there, over there.

HEDRICK SMITH: And what kind of readings did you get?

RICK DOVE: Extremely high. The E. coli standard is 126 colonies. Theirs was 48,392. And nitrogen and phosphorous all elevated, clearly indicating that animal waste is involved here, and even arsenic at nine times what the normal background level would be. So it was a lot happening here.

HEDRICK SMITH: [*on camera*] Farm owner Aaron Lessig did not respond to FRONTLINE's repeated efforts to ask him about the water tests, which Dove's team turned over to the EPA.

[*on camera*] So look who he's growing for. Lessig is growing these chickens for Perdue.

RICK DOVE: That's what the sign advertises, says it's Perdue, Lessing Farm.

FRANK PERDUE: [*television commercial*] Every Perdue chicken has one of these tags on it. It means you're getting a fresh, tender, tasty young chicken. I make sure of that because every one of these tags has my name on it.

HEDRICK SMITH: [*voice-over*] Over five decades, Perdue Farms grew from a family business to the dominant poultry processor on the Chesapeake's Eastern Shore. And as Perdue grew, it transformed the chicken industry.

JIM PERDUE, Chairman, Perdue Farms, Inc.: There used to be 200 companies on the Shore involved in the poultry industry, but they were all independent. So you had an independent hatchery, an independent processing plant. The story of the poultry industry and of Perdue is vertical integration.

HEDRICK SMITH: Integration meant a few big chicken companies controlling all aspects of production. Perdue mushroomed into a multi-billion-dollar conglomerate. Small family chicken farms became chicken factories.

JIM PERDUE: Well, I think capitalism in general stimulates efficiency, and efficiency often is size. And so, you know, I think things had to become bigger in order to keep costs lower so you could maintain, you know, your price structure.

HEDRICK SMITH: Factory-style poultry production drove down chicken prices, and Americans responded. Over the past 50 years, per capita consumption of chicken has tripled. But there's been another price to all those cheap chickens.

TOM HORTON, Bay Author and Reporter: Poultry farming, like most animal farming, has become much more intense, much more concentrated. Where you had 50,000 chickens on a given plot of ground, you've got a half million or two million now, which produces a huge problem of what to do with the manure.

HEDRICK SMITH: In 2008, Delmarva peninsula poultry farms raised more than 570 million chickens, and all those chickens produced massive mountains of manure, 1.5 billion pounds a year. That's more manure than the annual human waste from four big cities- New York, Washington, San Francisco and Atlanta- all put together.

Before mass production chicken farms, local crop farmers used to absorb the chicken manure. Now there's way too much for them to absorb.

J. CHARLES FOX, EPA Asst. Administrator, 1998-'01: Agriculture is by far the largest source of pollution to the Chesapeake Bay and it is arguably the single biggest source of pollution to all of the waters in the country.

HEDRICK SMITH: [*on camera*] So the problem isn't just manure, but it's too much manure.

J. CHARLES FOX: It's too much manure and arguably too many animals under the current structure. Now there's all-

HEDRICK SMITH: You mean too many animals in one place.

J. CHARLES FOX: Exactly.

HEDRICK SMITH: [*voice-over*] It's a problem all over the country- hog farms in the Carolinas and Iowa, poultry farms in Arkansas and Texas, cattle farms in Wisconsin and along the Susquehanna River in Pennsylvania.

ROBERT F. KENNEDY, Jr., Waterkeeper Alliance: In terms of just damage to the ecosystems, you know, the destruction of entire ecosystems, of aquatic communities, of fish going extinct, there's nothing as bad as these factory farm operations. Nothing.

HEDRICK SMITH: So to save the bay, the EPA says it's essential to get control over the animal manure. What's made that hard is deciding just who's responsible for all that manure.

To understand how the chicken business is organized and how it's run, I checked in with Carole Morison, a successful Perdue grower for many years.

CAROLE MORISON, Chicken Grower: Typically, the farmer has a contract with the company, whether it be Perdue, Tyson's, whoever, and you contract to raise their chickens. They own the chickens. They just drop them off on the farm for us to raise to a marketable age, and then they come and pick up the chickens, take them for processing.

HEDRICK SMITH: When Perdue required that Morison modernize her chicken houses at a cost of $150,000 or more, she decided to get out of the business. This is her last batch of Perdue chickens.

[*on camera*] Now, what's the relationship here? Do you bargain with one company or another as a grower?

CAROLE MORISON: There's no bargaining in the contracts. Contracts are designed by the company, brought out to the farm, and you either sign it and get chickens, or not sign it and not get chickens and ultimately lose the farm.

HEDRICK SMITH: So you're saying that the processors dictate the terms. They run the show.

CAROLE MORISON: Yes, the processors dictate all of the terms,

HEDRICK SMITH: [*voice-over*] The terms are very specific. The big chicken companies own the chickens, supply the feed, dictate the growing regimen, do all the processing. They own it all- except the chicken waste.

CAROLE MORISON: Well, anybody else who owns an animal is responsible for their waste. If the company owns the animal, why are they not responsible for their waste? I've never understood that. I have horses. I have a dog that's outside. I'm responsible for their mess. Now, chickens are owned by these companies, like Perdue and Tyson. How is it they're not responsible for it?

HEDRICK SMITH: [*on camera*] Help me understand one thing. How do you wind up by owning the chickens, owning the feed, and not owning, in the sense of legal responsibility, the manure?

JIM PERDUE: The manure is considered a resource, actually. The producers want the litter. They want the chicken litter. It's not a matter of who owns or doesn't own it, it's a matter of what use is being made from it.

HEDRICK SMITH: [*voice-over*] As factory farming has grown, the volume of excess manure has mushroomed, and there's been an increasing push to regulate farm pollution. But American agriculture has fought off pollution controls for three decades.

TOM HORTON: The whole agricultural community has remained maybe the last big or the biggest unregulated- largely unregulated area of water pollution. And it's why EPA tells you across the country agriculture's responsible for 60 percent or something like that of our water quality problems.

[*www.pbs.org: More on the agricultural industry*]

J. CHARLES FOX: We are talking the equivalent of medium-size cities in terms of the waste that is generated that is virtually untreated, going into the Chesapeake Bay and-

HEDRICK SMITH: [*on camera*] So cities have their waste treated, go through water treatment plants. Farming, agriculture, these concentrated animal raising operations, they're not treated the same way.

J. CHARLES FOX: That is absolutely correct.

HEDRICK SMITH: [*voice-over*] The Delmarva poultry industry on the bay's Eastern Shore doesn't see it that way. It contends that there's a fundamental difference between industrial pollution, or urban sewage, and agricultural waste. Industry spokesman Bill Satterfield,

[*on camera*] Shouldn't the poultry farms be subject to the same kind of limitations as sewage treatment plants or industrial plants?

BILL SATTERFIELD, Delmarva Poultry Industry: A small industrial site that has to have a permit knows the source of what goes into that pipe. With non-point source pollution, there are various ways that nutrients can get into the groundwater and maybe flow through that pipe. Farm fields-

HEDRICK SMITH: I'm not talking about fields. I'm talking about growers and sheds where- I mean, I've literally stood in front of farms and I've literally looked at chicken houses, and I've seen pipes coming into the drainage ditches coming from ditches between the chicken houses. The source visibly is quite clear.

BILL SATTERFIELD: To know where those nutrients came in would require an investigation. And if the pipe passed under a chicken house and started over here in a field, who's to say what entered that pipe on that end? Who's to say whether the nutrients, if there are any, came from chickens or fox or deer or birds or something else?

HEDRICK SMITH: Russell Long, famous senator from Louisiana, used to say when people gave an answer like that, "It's not you, it's not me, it's that guy behind the tree." It seems to me as though every time we get to this, even though the evidence is pointing to most highest concentrations right near agriculture poultry operations, you're saying, "Well, it could be the foxes or the geese."

BILL SATTERFIELD: If there were proof positive that those nutrients are from chickens, then we can accelerate our programs and do a better job. But we can't solve all the river's problems with all the people, all the growth, all the other animals on the back of the chicken and the poultry farmers.

CAROLE MORISON: I'll be the first one to say I did it. I've said this before. We're all part of it. And yes, I think agriculture is a big contributor to the pollution, to the run-off into the Chesapeake Bay. The industry knows it. And what I am tired of is everyone wasting all their time and energy in saying, "I didn't do it." I did it! Why can't they admit it? I mean, you know, let's all say, "OK, we're a part of it. Now let's find an answer."

HEDRICK SMITH: [*voice-over*] But finding an answer has been politically impossible. In the late 1990s, a bill went before the Maryland legislature to require mandatory nutrient management by farmers to curb run-off from chicken manure. Big chicken didn't like that idea at all.

JIM PERDUE: I think the survival of poultry industry is at stake on the Eastern Shore-

HEDRICK SMITH: The poultry industry, among the most financially powerful lobbies in Maryland, pushed for a looser alternative.

HOWARD ERNST, Bay Historian: The alternative was to have voluntary goals. It was going to be cooperative. It was going to have no regulatory teeth, and it was going to be overseen by the Maryland Department of Agriculture, a non-regulatory agency, rather than the Maryland Department of Environment.

FARMER: The farming industry can't live with mandatory nutrient regulations. We've got to keep it voluntary.

HEDRICK SMITH: And the industry bill won. And since then, the industry has been successful in blocking or tying up subsequent efforts to regulate their waste.

[*on camera*] You sat in the Maryland legislature for 12 years. During that period, did you see the big chicken companies steadily resist regulation on manure run-off?

LEON BILLINGS, Maryland Legislator, 1991-'03: Absolutely. Big chicken companies were a presence. Jim Perdue, the son of Frank Perdue, was a constant presence, whether he was sitting in my chairman's office or holding a reception in the evening or whatever. The chicken lobby was well represented. They hired the top guns in the lobbying community in Annapolis and they made every effort to prevent us from enacting tough regulations on agriculture.

HEDRICK SMITH: Some people have said to us that you'd clean up the whole situation much faster if the integrators, the poultry processors, were responsible. You got to clean it up and you all are responsible.

JIM PERDUE: Well, we can only do what we can do. The farmer certainly is, you know, his own businessman out there on the farm. And I think it works better if it's a cooperative effort.

HEDRICK SMITH: [*voice-over*] So Perdue pioneered a process to recycle part of the chicken growers' excess manure, to ship it across the country. And Perdue launched a voluntary program to teach its growers better manure management.

[*on camera*] And the programs that we're looking at are an alternative to more regulation, I guess.

JIM PERDUE: More regulation and enforcement, which nobody likes. I mean, nobody likes, you know, somebody coming onto your farm, you know, without any warning, and those kinds of things.

[*www.pbs.org: Read the interview*]

J. CHARLES FOX, EPA Asst. Administrator, 1998-'01: There's no question that the influence of the agricultural farm lobby in general has had a very successful role in limiting the amount of pollution control regulations that we see in the Chesapeake Bay watershed or nationwide.

ROBERT F. KENNEDY, Jr.: You know, corporations are externalizing machines. They're constantly devising ways to get somebody else to pay their costs of production. And you know, if you're in a polluting industry, the most obvious way to do that is to shift your clean-up costs to the public, make yourself a billionaire by poisoning the rest of us.

HEDRICK SMITH: [*on camera*] Are you saying the market's distorted?

ROBERT F. KENNEDY, Jr.: You show me a polluter, I'll show you a subsidy.

HEDRICK SMITH: [*voice-over*] Chicken farmers bristled when the Obama EPA started demanding pollution discharge permits this spring. The industry claims it's already doing enough.

BILL SATTERFIELD: The poultry industry is doing more every year. We're seeing more best management practices on farms. Our program to put trees on poultry farms to uptake the nutrients is a very progressive thing. There are more and more programs offered to help farmers put in manure storage buildings. And as the science says we can do more without putting our people out of business, I'm sure we will do more.

HEDRICK SMITH: But environmentalists like Rick Dove remain skeptical.

RICK DOVE: Now, this industry says they're doing better, and you know, I can't say if that's true or false. But I can tell you that what I'm seeing here on the ground right now is absolutely terrible. So if it was worse before, then I can understand why the bay is in such bad trouble.

HEDRICK SMITH: While the bay is beseiged by run-off from the big chicken and cattle farms along its rivers, I learned about a whole new kind of pollution as I traveled up the Potomac as it winds its way past Washington up towards the hill country of West Virginia.

Up here, near the headwaters of the Potomac, I heard about the big new pollution threat not even known when the Clean Water Act was passed. Six years ago, marine biologists became alarmed at reports of massive fish kills on the rivers in this region. Every year, smallmouth bass were being decimated by some mysterious problem. Spring and fall, hundreds of fish would be found floating in the water belly-up.

I caught up with Vicki Blazer, a fish pathologist with the U.S. Geological Survey, who was trying to figure out why the fish were dying.

[*on camera*] What have you got here?

VICKI BLAZER, U.S. Geological Survey: So here we have this large discolored area in the liver, and then you see all these little white spots. Here's another totally discolored area.

HEDRICK SMITH: And that's a signal of some bigger problem.

VICKI BLAZER: Yes, when we see a really high prevalence in a population, that indicates there's some problem going on in that water.

HEDRICK SMITH: [*voice-over*] And when Blazer dug deeper, she found a surprise.

VICKI BLAZER: One of the major and most interesting findings was intersex in the male bass. When we look at the male gonads, or testes, what we find is immature eggs within the male testes.

HEDRICK SMITH: [*on camera*] So you got a sort of feminization of male fish. Is that a big, alarming finding in marine biology, aquatic biology?

VICKI BLAZER: Yes, and that has certainly attracted a lot of concern and attention.

HEDRICK SMITH: [*voice-over*] Scientific studies have linked abnormal mutations in marine creatures, like intersex, to exposure to chemical compounds that mimic or imitate natural hormones in the body. These chemicals are called endocrine disrupters.

ROBERT LAWRENCE, M.D., Johns Hopkins School of Public Health: Endocrine disruptors are very, very potent chemicals at infinitesimally small quantification. I mean, you're talking about parts per million or parts per billion. They interrupt the normal way in which the body controls everything from growth and development to thyroid function to reproductive function to estrogen levels, testosterone levels. So they're very, very important, and they are of deep concern because there are so many of them now.

HEDRICK SMITH: There are thousands of these worrisome chemicals that have gotten into the environment, and one reason is that they're part of everything we do.

Dr. ROBERT LAWRENCE: The list of things that bring these organic pollutants into our bodies is a long list, and it ranges from home care products - soaps, toothpaste, cleaning agents in the household - to things we put on our lawns, the things that we use all the time- the plastic industry, the rubber industry, lubricants, fuels, the highways.

HEDRICK SMITH: [*on camera*] When you see scientists like Vicky Blazer cutting open fish, finding intersex in the male fish, seeing high levels of fish kills, seeing immune systems disrupted, seeing other damage to the fish, is that a warning to you, potentially, about human health?

Dr. ROBERT LAWRENCE: Oh, absolutely. The warning- not just from the smallmouth bass in the Potomac but from amphibians all across the country. You have frogs with six legs, hermaphroditic frogs, male frogs with ovaries, female frogs with male genitalia. These are the canaries, the modern canary in the mine that we haven't been paying enough attention to.

[*www.pbs.org: More on endocrine disruptors*]

HEDRICK SMITH: [*voice-over*] So many new chemicals have emerged lately that scientists and regulators are playing catch-up to industry, trying to spot which chemicals they think pose new danger in our water.

VICKI BLAZER: EPA does not regulate any of these things yet. And in many cases, there isn't even the methods to measure them in the amounts that they actually have a biological effect.

HEDRICK SMITH: [*on camera*] So science and the regulators are behind the curve dealing with what industry and society is producing or wants.

VICKI BLAZER: Correct.

HEDRICK SMITH: [*voice-over*] Playing catch-up in regulating these new chemicals may be a problem for more than just these fish.

VICKI BLAZER: The endocrine system of fish is very similar to the endocrine system of humans. Fish have thyroid glands. They have the functional equivalent of adrenal glands. They pretty much have all the same hormone systems as humans, which, again, is why we use them as sort of indicator species.

HEDRICK SMITH: [*on camera*] So if fish are having intersex, or lesions, that's kind of spooky.

VICKI BLAZER: It is. You know, we can't help but make that jump to ask the question, "How are these things influencing people?"

HEDRICK SMITH: [*voice-over*] To get a handle on that question, I headed downriver. Just above Washington, I found another USGS team sampling water from the Potomac, part of a nationwide survey checking for 300 emerging contaminants in our drinking water.

They were looking for well-known pollutants, like pesticides, and for newly detected contaminants found in pharmaceuticals, body lotions, soaps and deodorants. In all, they found 85 compounds on their watch list.

JUDY DENVER, U.S. Geological Survey: Many of them are chemicals we're just now starting to be able to even analyze for in water, but the treatment isn't intended to remove those products.

HEDRICK SMITH: What makes this a matter of concern is that this is the intake for the Washington Aqueduct, where one million people in the D.C. area get their drinking water. Few of us may realize it, but people downstream use the wastewater from people upstream. The Potomac, like other rivers, serves as both the place where we dump our wastewater and the place where we get our drinking water. It's one big, continuous recycling operation from the toilet or the shower to the tap.

THOMAS JACOBUS, Gen. Mgr., Washington Aqueduct: The river flows down, a community takes water out of the river, puts it back through a wastewater plant a few miles down- out, back, out, back. And with proper regulation and proper processes at the wastewater plant and proper processes at the drinking water plant, it works very well. So we sort of continuously recycle this.

HEDRICK SMITH: The recycling process works well for known contaminants, but what about the new chemicals for which the EPA has not yet set safety standards?

[*on camera*] How tough is the challenge just to keep up with all that, new sources of pollutants?

THOMAS JACOBUS: As new elements come in - synthetics, herbicides, pesticides, pharmaceuticals - as those things enter the water stream in concentrations because of more advanced development, more human activity, more animal activity, more commercial activity, those things as they get in the river make it harder for us to do our job. There's no question about that.

HEDRICK SMITH: [*voice-over*] Not just harder but actually impossible to stop all the new contaminants, according to the USGS findings, because the old filters weren't designed to catch the new threats.

JUDY DENVER: We sampled the finished water at the Washington Aqueduct and we found about two thirds of the compounds we detected were still detected in finished water.

HEDRICK SMITH: [*on camera*] So you're saying that roughly two thirds of these emerging contaminants that you found in the river water at the intakes for the Washington Aqueduct came all the way through-

JUDY DENVER: Yes.

HEDRICK SMITH: -the filtering system and were in-

JUDY DENVER: Right.

HEDRICK SMITH: -the drinking water, the tap water in the District.

JUDY DENVER: And that's what we saw at all the studies that were done.

HEDRICK SMITH: [*voice-over*] Denver's findings mirrored what USGS has found all across the country. Everywhere, they saw lots of new contaminants in America's drinking water, even if at low doses.

[*on camera*] Were you surprised by the findings of this USGS study, or did you- did that fit what you thought was probably going on?

Dr. ROBERT LAWRENCE: I was surprised by the number of different compounds that were detectable. I knew we were swimming in a sea of chemical soup, but I didn't realize the soup was quite as concentrated as it is.

HEDRICK SMITH: You talk about a soup. Some people have used the term "toxic cocktail." Is there a danger that if a level of a particular compound were acceptable and another one were acceptable, that you start to put a bunch of them together and then that's no longer a safe level?

Dr. ROBERT LAWRENCE: You put your finger on one of the real concerns about toxicology. It may be safe to have a little bit of compound A or a little bit of compound B, but when the two of them are together, there's synergism and they become really deadly.

HEDRICK SMITH: If you were living in Washington, D.C., would you drink water coming out of the Potomac?

VICKI BLAZER: Probably not.

HEDRICK SMITH: Because?

VICKI BLAZER: Because we really don't know what all is in there.

THOMAS JACOBUS: Today I drink the water with great confidence because our water meets the regulations. But of course, the question is, "Do the regulations match the threat?"

HEDRICK SMITH: Were there endocrine disruptors, chemical compounds in the Washington Aqueduct intake water that were of concern to you in terms of their potential impact on human health?

LINDA BIRNBAUM, Dir., Natl. Inst. of Environmental Health Sciences: Are there chemicals of concern? Yes. I think at this point, the levels are very, very low, so I don't have a great deal of concern that something needs to be done imminently. But it would certainly be nice to reduce what's getting into the water. We can show that people with higher levels of some of these chemicals may have a higher incidence of a certain kind of effect than people with lower levels of these chemicals.

HEDRICK SMITH: Like what kind of effect?

LINDA BIRNBAUM: There are associations with what's called male testicular disgenesis syndrome. That's a big term, but it means-

HEDRICK SMITH: Lower sperm count?

LINDA BIRNBAUM: Lower sperm count.

HEDRICK SMITH: Are we facing a long-term, slow-motion risk that we don't recognize because it's not readily apparent?

Dr. ROBERT LAWRENCE: We are. There are five million people being exposed to endocrine disruptors just in the mid-Atlantic region, and yet we don't know precisely how many of them are going to develop premature breast cancer, are going to have problems with reproduction, going to have all kinds of congenital anomalies of the male genitalia, things that are happening. We know they're happening. But they're happening at a broad low level so that they don't raise the alarm in the general public.

HEDRICK SMITH: Do you know what the safe levels are?

LINDA BIRNBAUM: In most cases, we don't know what the safe levels are. And some of the new science is suggesting that levels that we used to think were safe may, in fact, not be safe.

HEDRICK SMITH: For humans.

LINDA BIRNBAUM: For humans. So we're finding in certain cases that much lower levels than we previously thought were a problem may, in fact, have the potential to harm at least some segment of the population.

HEDRICK SMITH: Do we have an adequate system of regulation, or should we be regulating on a different standard?

LINDA BIRNBAUM: I'm not a regulator, I'm a researcher. But in my personal opinion, I would like to know that a chemical is unlikely to cause harm before we expose our population to it.

HEDRICK SMITH: [*voice-over*] It's our failure to control toxic chemicals before they cause trouble in the environment that haunts our waters all across the nation, places like Puget Sound, which I've come to know well in recent years. The sound, lying off the coast of Seattle, is a place that I've come to cherish as a phenomenal resource, a gorgeous natural playground, gateway to the Pacific, and historically a treasure house of fish and wildlife. But today, the sound is in peril.

KATHY FLETCHER, People for Puget Sound: I would put Puget Sound in the intensive care unit. The situation is critical. We've known for decades that Puget Sound had serious issues, but we're at a point now where the species that are almost extinct are telling us we've got some real bottom line problems here.

HEDRICK SMITH: Take these regional icons, the killer whales, or orcas. They're a major tourist attraction, but increasingly, Puget Sound orcas are being closely studied by scientists as a barometer of the health of the entire sound. To see what scientists are learning, i headed out with Brad Hanson, a team leader with NOAA, the National Oceanic and Atmospheric Administration.

BRAD HANSON, NOAA Wildlife Biologist: Over there! Over there!

HEDRICK SMITH: Hanson and his colleagues have been studying the orca population for several years.

[*on camera*] Why study these whales?

BRAD HANSON: They're the top predator in the food chain, so they're essentially accumulating all the contaminants. They're the last stop in the food chain.

HEDRICK SMITH: So they're a laboratory, in a way.

BRAD HANSON: Yeah.

HEDRICK SMITH: A laboratory that tells us what's going on in the whole ecosystem.

BRAD HANSON: Yes.

HEDRICK SMITH: [*voice-over*] The orca story is troubling. In one year, seven local orcas died. Their population is now down to 86, so low that in 2005, NOAA listed Puget Sound orcas as an endangered species. To figure out why the orca population is in decline, Hanson's team goes out after biological samples.

[*on camera*] You get up pretty close to these whales in order to take samples.

BRAD HANSON: We get to about four or five meters.

HEDRICK SMITH: Four or five meters. So that's pretty close. OK, so let's see how it works.

BRAD HANSON: OK.

HEDRICK SMITH: [*voice-over*] they shoot darts into the orcas and extract small samples of blubber. That blubber is sent to the lab to be tested for a slew of contaminants, especially telltale toxins like PCBs. The lab results have been alarming.

PETER ROSS, Dept. of Fisheries and Oceans, Canada: Our research over the last 10 to 13 years has been able to demonstrate that these killer whales are the most PCB-contaminated marine mammals in the world. So we're very, very concerned about what that might mean to their health.

HEDRICK SMITH: [*voice-over*] PCBs are cancer-causing chemicals so toxic that Congress banned them three decades ago. But they keep showing up.

PETER ROSS: PCBs are probably the number one persistent contaminant of concern anywhere in the northern hemisphere. They bioaccumulate in food webs.

HEDRICK SMITH: You mean they build up.

PETER ROSS: They build up in food webs and in organisms. We have trouble getting rid of them. We have a lot of trouble getting them out of our system. When I say "we," I mean humans, rats, killer whales, harbor seals, doesn't really matter.

HEDRICK SMITH: [*voice-over*] Increasingly, scientists worry that PCBs are a problem not just for orca whales.

BRAD HANSON, NOAA Wildlife Biologist: Well, we need to pay attention to what's going on to these guys because if we don't, we're going to have the same problems coming back and affecting us. These animals are eating wild fish we want to eat. Wild fish is good for us, too. But if there's contaminants in it, it's going to have an adverse impact on us. That's the thing. That's why these animals are important sentinel species not just for the ecosystem in general, but also for humans.

HEDRICK SMITH: At the Center for Whale Research, director Ken Balcomb has been keeping records for three decades on the whales that make Puget Sound their regular home.

KEN BALCOMB, Center for Whale Research: Fewer whales are making it to maturity. The population is declining. We are seeing- probably the next 20 years, we'll be witnessing the departure of this population.

HEDRICK SMITH: [*on camera*] You think they're gone, they're going to die out.

KEN BALCOMB: I've already told our government folks that we can go through this for about 20 more years if we don't provide a remedy, and we will see the end of this population.

HEDRICK SMITH: [*voice-over*] Balcomb and his staff know these whales so well by sight that they can track them from birth to death.

[*on camera*] So what's this? What are these charts?

KEN BALCOMB: These are the family trees of all the whales we've been studying for the last 32 years.

HEDRICK SMITH: [*voice-over*] The tombstone markers, Balcomb told me, underscore a worrisome trend among the youngest, most vulnerable, orcas.

[*on camera*] These older whales up here, they died. That's kind of normal. But you get all these, the young ones dying. Is that a bad sign?

KEN BALCOMB: Yes, that's the disturbing part of the mortality pattern we're seeing now is that young whales are dying way before they even mature.

HEDRICK SMITH: [*voice-over*] He's alarmed at the high levels of PCBs that Hanson's team found in younger whales which absorbed PCBs from their mother's milk.

[*on camera*] Are there enough parallels between the way the human body works, the chemistry and biology of the human body, and the whales so we can actually take lessons from them?

KEN BALCOMB: Yes. We can take lessons from not only the whales but the seals and the fish. And it's been demonstrated in the health statistics in especially Arctic environments, cold environments where there's a high-fat diet, and the children of these high Arctic people are suffering these same problems- immune deficiencies, reproductive problems, nervous disorders- are affecting humans as well as the other mammals.

HEDRICK SMITH: [*voice-over*] At NOAA testing labs like this one, scientists have established that king salmon are more heavily contaminated with PCBs than salmon in other Pacific coastal waters

PETER ROSS: Everything we see points to Puget Sound being a hot spot for PCBs and a persistent problem. We've seen contamination of animals. We've seen no improvement in the levels of PCBs in the last 20-odd years, despite regulations implemented in the l970s. And that to me indicates there are continuous inputs from land-based sources, from the sediments, and delivering them right into that food web.

HEDRICK SMITH: One big reason PCBs are a persistent problem is that it takes so long to clean up places like the Duwamish River, Seattle's industrial corridor. Some of Seattle's heaviest industry settled here decades ago, and today it's the region's largest hot spot for PCBs.

B.J. CUMMINGS, Duwamish River Cleanup Coalition: My name is B.J. Cummings. I represent the Duwamish River Cleanup Coalition.

HEDRICK SMITH: B.J. Cummings leads tours of the river. But this isn't your typical tourist outing, it's an environmental

wake-up call.

B.J. CUMMINGS: The EPA did an investigation here on Duwamish River about 10 years ago and concluded that industrial history had left such legacy of toxic pollution that the river was declared a federal Superfund site in 2001.

HEDRICK SMITH: Superfund is one of EPA's big sticks. It was the regulatory program created in 1980 to clean up America's worst pollution problems.

B.J. CUMMINGS: Your typical Superfund site used to be factory, pipe, Superfund site-right at the bottom of your pipe. That's not what we have here. We have what's called a mega-site. We have a five, five-and-a-half-mile stretch of river, end to end, that's being investigated for clean-up. This is one of the largest Superfund sites in the country. The river was listed as a Superfund site because of an accumulation, a legacy of toxic pollution that has built up in the mud at the bottom of the river.

PETER ROSS: There's a direct link between contaminated sediments in certain areas and contamination of the food web above those sediments. In fact, one might even think of the PCBs riding an elevator up from the sediments up into plankton, up into little fish, big fish, harbor seals, killer whales, eagles, humans.

HEDRICK SMITH: The toxic build-up in the Duwamish river-bottom is the product of more than a half century of industrial development along the river. Boeing, for example, the area's biggest corporation, had its main operations here during World War II.

BOEING PROMOTIONAL VIDEO: We are the builders. We are the builders of the B-17. With our hands a million strong, we built and drilled and-

HEDRICK SMITH: The success of Boeing mirrored the 20th century boom in the American economy, an era when industrial progress brought unprecedented expansion.

BOEING PROMOTIONAL VIDEO: Ours were the hands that built the queen, the B-17-

HEDRICK SMITH: But that progress also left behind an unprecedented amount of pollution, or what's called legacy pollutants.

STEVE TOCHKO, Boeing Environmental Officer: The term "legacy pollutants" is when its historical practices what, what was acceptable in the '40s and '50s is we would find very objectionable today in the '90s, in the '80s and beyond. People did not know the damage that some of these materials caused at the time. They did not know the long-term effects of them that we do today.

HEDRICK SMITH: PCBs are a classic legacy pollutant found here at Boeing, a toxic chemical once widely used by industry, often as a high stress lubricant in power stations and also in building materials. Frequently, it takes a lot of detective work to find hidden PCBs.

[*on camera*] So Steve, you found a contamination problem in the flight line out here.

STEVE TOCHKO: Yeah, it's this material that we see between the concrete panels. It's called joint compound. Material that was installed in the late '60s contained very high levels of PCBs. And you know, since we had made this discovery, you know, in the late '90s, we have now removed about 50 miles of this throughout all.

HEDRICK SMITH: Fifty miles of this black tar-looking stuff.

STEVE TOCHKO: This material throughout all of the Boeing facilities here in the Northwest.

HEDRICK SMITH: Why was it so hard to find?

STEVE TOCHKO: Well, it wasn't obvious to us. It was- you know, normally, when people talk about PCBs, you think about electrical equipment, you think about hydraulics. That's where it normally PCBs are used. The fact that they were used in something that was right in front of us was, you know, difficult. It was really difficult that we- we overlooked it.

HEDRICK SMITH: [*voice-over*] Making sure that Boeing doesn't overlook any of its legacy pollution is the job of Shawn Blocker, a former Marine who has been EPA's point man on the clean-up at Boeing.

SHAWN BLOCKER, EPA Boeing Site Manager: OK, what I want to talk about today is based on some additional data we have that's on the sediments outside the current boundaries of the clean-up for Boeing Plant 2.

The significance of the Boeing facility is the number of contaminants that originate from the facility. It has over 24 things in the ground water, 40-some-odd different things that are in the soil that are above clean-up levels. So it's the

biggest accumulation of contaminants in that area.

HEDRICK SMITH: From the get-go, Boeing and EPA have clashed over how to clean up those legacy pollutants, and the arguments have led to long delays.

[*on camera*] When were you first ready to go with a clean-up plan?

STEVE TOCHKO: We submitted a plan to EPA in 1999, when, you know, to dredge- we call it an interim measure- to take what is adjacent to Boeing and excavate that material.

HEDRICK SMITH: Boeing says that over a decade ago, it was ready to clean up, and all that held it up was bureaucratic red tape from the EPA.

SHAWN BLOCKER: I would disagree with that. From my review of what they were going to do, I didn't think they had fully defined where all the bad stuff was. They didn't know the totality of what the contamination was even in the ground water or soil.

HEDRICK SMITH: But you obviously had a higher threshold for "Let's get to the bottom of how bad this pollution is" than Boeing did.

SHAWN BLOCKER: Boeing is doing what they're asked to do. No more, no less.

HEDRICK SMITH: [*voice-over*] So time and again, Blocker pressed Boeing to do more- more work and more tests. By now, Boeing has spent $80 million on testing and interim clean-ups.

STEVE TOCHKO: There's over 500 sampling locations at this facility that have been drilled over time, you know?

HEDRICK SMITH: If you came here 10 years ago, how many would there have been.

STEVE TOCHKO: Fifty.

HEDRICK SMITH: So hundreds more have been drilled since because of this back and forth with the EPA.

STEVE TOCHKO: That's correct, yeah.

HEDRICK SMITH: [*voice-over*] Not only has Boeing been feuding with the EPA, but it's been locked in a fierce battle with with the city of Seattle, which used to operate a steam plant next door to Boeing Field.

Typical of Superfund sites, these two powerful neighbors have been wrangling over who's responsible for PCBs flowing through this ditch, or flume, when it rains. The flume runs from the now defunct steam plant through boeing's territory to the river. Boeing says it's the city's PCBs.

[*on camera*] So was this just for City Lights steam plant, or did Boeing and others put storm drains into this and use it?

STEVE TOCHKO: Pretty much just for cooling water from steam plant.

HEDRICK SMITH: [*voice-over*] The city flat-out disagrees, and it has taken Boeing to court.

MARTIN BAKER, Seattle Public Utilities: PCBs are coming by connections of other people to our ditch. They come through drainage lines. They come from other properties, most specifically Boeing's property.

HEDRICK SMITH: [*on camera*] So Boeing was attaching its drainage pipes to your flume, sending some of its dirty stuff down your flume to the river.

MARTIN BAKER: There are over 20 lines attached to our ditch that came from the Boeing property.

HEDRICK SMITH: Twenty lines? So it's a protracted argument between you and Boeing over who actually put the dirty contaminants in that flume.

MARTIN BAKER: It's a continuing argument.

HEDRICK SMITH: [*voice-over*] And that argument is holding up the big cleanup on the Duwamish River. Jay Manning, who heads Washington's Department of Ecology, which helps EPA supervise the clean-up, showed me the cost of this continued delay to Puget Sound.

JAY MANNING, Director, Wash. Dept. of Ecology: We're looking at four very large outfalls of drainage pipes that carry

stormwater from more than 30 square miles of this area. You can see the one there to the right.

HEDRICK SMITH: [*on camera*] So this is an industrial dumping ground, in effect.

JAY MANNING: This stormwater drains a very large industrial area.

HEDRICK SMITH: Are you all still finding PCBs and other contaminants in that water?

JAY MANNING: Unfortunately, the stormwater coming out of those drain pipes, we're still detecting PCBs.

This is going to cost millions to clean up, maybe tens of millions, and owning 90 percent of that liability is not a place you want to be. So these folks, who are not stupid, are busy trying to prove that it's somebody other than them that is the source.

HEDRICK SMITH: Pointing the finger at everybody else.

JAY MANNING: That's right. They're trying to prove, probably not that they have no liability, because that's pretty hard to do, but proving that they have very little compared to their neighbor. That's what it's about, and it's about money.

HEDRICK SMITH: [*voice-over*] Ultimately, the issues of clean-up - time and money - are tied to a larger question for all of us. That is, how clean do we expect our waterways to be?

Here on the Duwamish, the state has posted warnings not to eat local fish and shellfish because of pollution, and so the fight now is over whether the river can be cleaned up enough to let the locals fish the river once again without risk.

SHAWN BLOCKER, EPA Boeing Site Manager: And what we determined was that the most sensitive population we had out there were our Native Americans that eat the fish out of the Duwamish.

HEDRICK SMITH: [*on camera*] And they eat a lot more fish than most of us.

SHAWN BLOCKER: They do.

HEDRICK SMITH: And so that was the standard you wanted to set, clean it up so the tribes can eat the fish safely without getting poisoned from PCBs.

SHAWN BLOCKER: Yes.

HEDRICK SMITH: And Boeing objected to that?

SHAWN BLOCKER: Basically, they don't feel that that stretch of the river can ever be returned to where you could harvest these kind of fish and shellfish. We disagree with that.

STEVE TOCHKO, Boeing Environmental Officer: So I think people need to understand is that there are going to be certain uses of the Duwamish River that aren't going to be possible in the future. I'll give you an example. I don't think people are going to be able to subsistence fish out of the species that are in the Duwamish. I think we have to set reasonable expectations for clean-up in industrial areas. I don't think that you can say it's going back to zero.

HEDRICK SMITH: Where do you come down on that? [*voice-over*] Do we need to get rivers back to where people can fish and safely eat the fish without fear to their health?

Gov. CHRIS GREGOIRE (D), Washington: That is the goal. That has to be the goal because every one of those rivers and streams are going into Puget Sound. So it's not as though it's that river or that stream alone, it's about the whole ecosystem.

HEDRICK SMITH: [*voice-over*] Just across the river from Boeing, the threat of legacy pollution and the question of how clean is clean became personal right here in South Park, where in 2004, the community was rocked by news that some of its streets and people's yards were contaminated with PCBs.

B.J. CUMMINGS, Duwamish River Cleanup Coalition: People in South Park, particularly people with families, with small children, got incredibly nervous- I mean, out and out scared about what this might mean. We- you know, I pushed my kid's stroller down that street every day. I go down there and I fish. My dog runs along that waterfront. What does this mean for me? What does this mean for my health?

RESIDENT: I mean, you're trying to do the best for your kids, and all of a sudden, something like this comes out.

RESIDENT: It is so scary, what you said-

NEWSCASTER: PCBs, cancer-causing microbes banned in the '70s but now taking an emotional toll on the residents of South Park today.

HEDRICK SMITH: The city of Seattle realized it had a crisis and moved quickly to pave the contaminated streets, clean up the polluted yards, and tell people how to take safety precautions. Suddenly, South Park, a largely immigrant working-class neighborhood surrounded by industry, was galvanized into action. Residents demanded a long promised clean-up of an abandoned industrial site called Malarkey Asphalt.

B.J. CUMMINGS: Malarkey Asphalt for years operated directly across the street from homes in South Park and was a really, really dirty business. For many years, there was open dumping on the riverbank. There was waste oil that was sprayed in the area to keep the dust in the unpaved streets down, and that contaminated the roads and yards, right in people's gardens around the property.

HEDRICK SMITH: [*voice-over*] Years earlier, the old Malarkey site had been bought by the port of Seattle, which did a PCB cleanup on part of Malarkey's property. But people in South Park suspected there were still many more, undiscovered PCB hotspots upland from the riverbank at Malarkey.

B.J. CUMMINGS: So the neighborhood said, "Go take some tests there. Tell us what's there." EPA and the port said, "Oh, no, no. We did the upland. It's finished." We eventually were able to succeed in getting just a few more tests. "Just assure us, show us it's OK."

HEDRICK SMITH: Doug Hotchkiss, the port's manager for the Malarkey site, ran tests, and what he found surprised everyone.

[*on camera*] So what was the hottest spot you found? How high was it?

DOUG HOTCHKISS, Site Manager, Seattle Port: The hottest spot for PCBs was right in this area here, and it was about 9,000 parts per million.

HEDRICK SMITH: Nine thousand? And the federal limit is 25. I mean, so this was a really hot spot.

DOUG HOTCHKISS: Yeah. And luckily, it was under asphalt, but it was still something that even under asphalt, you couldn't just leave there.

HEDRICK SMITH: [*voice-over*] So Hotchkiss drafted a plan to clean up Malarkey. But it backfired.

DOUG HOTCHKISS: We would be cleaning up to 25 parts per million, which was the cleanup level that EPA had accepted before.

HEDRICK SMITH: [*on camera*] And how did the community take that? How'd they react?

DOUG HOTCHKISS: They were- they were not happy with it. They didn't find it acceptable.

HEDRICK SMITH: [*voice-over*] In fact, South Park was up in arms, insisting on a clean-up to the residential standard of one part per million.

B.J. CUMMINGS: Duwamish River Clean-up Coalition, residents from South Park, started calling up port commissioners and explaining the problem to them. And they got in vans and buses and went down where the port commission was meeting, and one after another got up and told the port commission that they were worried about their health and that the port commission had the responsibility to the community to make sure that that clean-up would be safe for the entire community to use from that point forward.

JOHN CREIGHTON, Seattle Port Commissioner: Well, it was a very emotionally charged meeting. I wouldn't necessarily say it was confrontational, but it was a lot of emotion in the room. And I remember a particular episode where a young mother came up to the stand and said, you know, "If it's only a question of money, how can you forsake the children of South Park?" And that was something that really hit home to me.

HEDRICK SMITH: So the elected port commissioners, sensitive to public opinion, backed down. They adopted the more protective residential standard- at twice the cost.

B.J. CUMMINGS: I think that this effort has been successful because this community has been uncompromising in speaking up for itself and in insisting that people listen. We essentially have a community here that has been on the fringes of any kind of economic or political power in the city of Seattle for many decades. So it's a community that has only recently re-found its voice.

HEDRICK SMITH: [*voice-over*] By finding its voice, South Park redefined the meaning of clean, and the community is

now at work developing riverfront habitat zones at Malarkey and elsewhere along the Duwamish.

JAY MANNING: In the absence of a B.J. Cummings or somebody like her who is out there on the water, knowledgeable, aware of what is happening and poking and prodding and asking us the hard questions, we would not be making the progress that we're making.

HEDRICK SMITH: The greatest threats to our waterways are often invisible to the naked eye. Evidence crops up in unlikely places, like Alki Beach, across Elliott Bay from downtown Seattle. It's a favorite spot for scuba divers, but taking to the water here isn't for the faint of heart. Temperatures in the Puget can be in the 40s.

But for the adventurous, underwater exploration offers a unique perspective on the marine environment.

MIKE RACINE, Wash. Scuba Divers Assn.: Today we saw a giant Pacific octopus underneath the Honeybear, which is a little boat that sunk out here. It lives underneath the bow of the boat.

HEDRICK SMITH: It also provides a close-up view of the hidden threat to Puget Sound, like this drainage pipe, one of the main outfalls for Seattle's rainwater runoff.

MIKE RACINE: We swam by the end of the storm water drain. It's pretty dramatic. The end of the pipe creates a brown noxious soup of nastiness that is unbelievable and a little bit scary.

HEDRICK SMITH: Unbelievable because the water looks so good from up here.

[*on camera*] So we're looking at something we think is clean, and underneath, you can see diving there-

MIKE RACINE: It's not clean,

HEDRICK SMITH: It's dirty.

MIKE RACINE: It's not clean. When we- when we see that thing running in full flow, we turn around and we swim the other way quickly. There is just this unbelievable, you know-

HEDRICK SMITH: Gunk.

MIKE RACINE: -gunk coming out of the end of this pipe. This is our front yard. Would you allow your front yard to be sick?

HEDRICK SMITH: This is sick?

MIKE RACINE: This is sick. Doesn't look sick, but it is sick.

HEDRICK SMITH: [*voice-over*] What's making this water so sick is what scientists have now labeled the number one menace to our waterways, stormwater runoff. In Seattle, peak time for stormwater runoff is during fall and winter, when the rain comes down in torrents.

JAY MANNING, Director, Wash. Dept. of Ecology: Everywhere that rain falls and hits the ground, it's going to pick up something. It might be nothing more hazardous than dirt, or it might be PCBs. It might be some toxic pesticide. And it will travel along with the water into the nearest drainage ditch, into the nearest swale, into a creek, into a river and ultimately into Puget Sound. And whatever pollutants that water picks up on its journey to Puget Sound it's going to deposit in Puget Sound.

Gov. CHRIS GREGOIRE: We put in about 150,000 pounds a day of untreated toxics into Puget Sound. We thought all the way along that it was like a toilet. What you put in, you flush out and it goes out to the ocean and it gets diluted. We know that's not true. It's like a bathtub, so what you put in, stays there.

HEDRICK SMITH: [*voice-over*] The pollution in stormwater runoff in major cities like Seattle or in suburban and urban areas across the country is massive, yet until recently, it was little controlled. The orginal Clean Water Act didn't regulate stormwater at all, though some limits have been adopted since. But the problem remains poorly understood because so much of the pollution is invisible.

JAY MANNING: People go nuts over a 50-gallon oil spill because you can see it and it's really nasty looking. When you see it on the water, it is impressive how horrible it looks. And oil spills aren't invisible. They are highly visible and they galvanize people like nothing else.

HEDRICK SMITH: [*on camera*] What about the invisible? What about the auto traffic? What kind of, quote, "oil spill" is there from our ordinary living?

JAY MANNING: Based on actual sampling in the Puget Sound basin, we have estimated that the volume of oil that is carried into Puget Sound by stormwater run off is equal to the oil spill in Prince William Sound that the Exxon Valdez spilled. Every two years, the stormwater in Puget Sound carries that volume of oil into Puget Sound.

HEDRICK SMITH: [*voice-over*] the heart of the problem is concrete, asphalt, streets, sidewalks, buildings, shopping centers, suburban housing, rooftops, hard surfaces - what scientists call impervious surfaces - that block the downpour of rain from naturally sinking into the ground.

JAY MANNING: How the land is developed - how intensely - will have a direct impact on the quality of stormwater. You take down a forested area and replace it with pavement or a rooftop, and instead of almost all of the water slowly moving through the forest canopy and down to the ground and infiltrating down into groundwater where it will move slowly, That water, the day it lands, within minutes of it hitting the ground, it's going to be gone.

HEDRICK SMITH: And so scientists, environmentalists and regulators all say that combatting pollution is not just a matter of regulating industry, but the key to stormwater runoff is land use, how we develop and use our land.

King County, I learned, has become a laboratory for testing the politics of land use. It's an area bigger than the state of Rhode Island, home not just to Seattle and 1.8 million people, but two thirds of it is still forest. So it's an area where environmentalists want to strictly control the pace of development, and the man who has been leading the charge is long-time King County chief executive Ron Sims.

RON SIMS, King County Executive, 1996-'09: You have to protect our forests. You have to. And our agricultural areas. You must. Because if we don't protect them, our water quality will be significantly diminished. And why sacrifice clean water for growth?

HEDRICK SMITH: Sims says his mission has been to save Puget Sound by protecting critical areas like forests. Way up here, 45 miles east of Seattle, he paid $22 million in tax money to buy development rights on 90,000 acres of forest, meaning that no developer could build on that land.

RON SIMS: People were going to build their homes here. They were going to have their supermarkets here, their gas stations here. We stopped it. We stopped it forever.

HEDRICK SMITH: [*on camera*] What does saving this timberland have to do with Puget Sound?

RON SIMS: The waters that come off this 90,000 acres flow into the Snoqualmie River, which flows into Lake Washington, which flows into Puget Sound. We need pristine waters coming from this timberland into the Puget Sound, and so this property is absolutely critical to it.

HEDRICK SMITH: [*voice-over*] Washington state's Growth Management Act directs local government leaders like Sims to concentrate new growth in cities and to prevent sprawl in lightly populated rural areas. For King County, Sims pioneered a Critical Areas Ordinance that limits just how much forest and woodland property owners can cut down. Sims targets places like this, a five-acre, one-family plot of land that belongs to Howard and Patti van Laeken.

HOWARD VAN LAEKEN, Property Owner: Back in 2004, at the end of 2004, King County passed this Critical Areas Ordinance that takes away the usage of 65 percent of your property. If you don't have it cleared off, and we didn't have ours cleared off at the time, so we're- we cannot touch 65 percent of our property.

HEDRICK SMITH: [*on camera*] So why do you want to clear more than 35 percent of this wonderful forest?

HOWARD VAN LAEKEN: Well, what we originally planned when we were- in 1980, when we bought it, was that we could subdivide and maybe give our kids a parcel of land to build a house on or- and/or sell off part of the property for the proceeds to be able to keep our house and retire and keep our house.

HEDRICK SMITH: How do you feel about that?

HOWARD VAN LAEKEN: Rather angry.

PATTI VAN LAEKEN: Very angry. Very angry. It's our property. We have been paying taxes on this property since 1980, and we can't even plant grass?

HEDRICK SMITH: Angry at whom? Angry at what?

HOWARD VAN LAEKEN: I'm angry at the King County government because they more or less took away our property rights without any compensation for our property.

PATTI VAN LAEKEN: We're getting the shaft. They're putting the burden on the small land owner, not on everybody.

HEDRICK SMITH: [*voice-over*] The van Laekens' problem actually stems from a zoning ordinance passed in the early 1980s that barred subdivision of properties under five acres. But to many rural land owners, Sims's new ordinance was the last straw and they formed the Citizens Alliance for Property Rights. I met with several of them one evening over a beer in Issequaw.

STEVE HAMMOND, Citizens Alliance Leader: We're in the same position that the blacks were in the l950s. Absolutely. We are calling. We are crying. We are doing everything we can to talk to those who have their hands on the levers, and they aren't listening.

HEDRICK SMITH: One throbbing refrain was resentment against political domination by the urban majority, which outnumbers rural voters nearly 5 to 1.

RODNEY McFARLAND, Citizens Alliance Activist: We talk about critical areas ordinance like it's a nice little one-page thing. We're talking about over 400 pages of amendments to existing law- 400.

HEDRICK SMITH: [*on camera*] How much of the frustration out here is a matter not just of a single ordinance but of a series of regulations that feel onerous? I mean, how much of this has built up over time?

PRESTON DREW, Citizens Alliance Activist: Much of it has built up. It started in '88 with the Sensitive Areas Ordinance. In 2000, we had a gigantic down-zoning fight. And then the coup de grace was the 2004 Critical Area Ordinance.

HEDRICK SMITH: So it's an accumulation.

PRESTON DREW: It's very much an accumulation of regulations.

HEDRICK SMITH: [*voice-over*] They told me people were so steamed up that Ron Sims rarely dared to come to their part of the county.

[*on camera*] People on his staff say he's gotten threats. Do you believe that?

DAROL JOHNSON, Citizens Alliance Activist: If it wasn't for us, I bet somebody would've have gone for 30-6s.

HEDRICK SMITH: You're talking about they would go for 30-6s? Guns?

DAROL JOHNSON: I'm not saying they would, I'm saying they're terrified. I'm saying there are people who are so angry. If we didn't have a way to direct that to get some results, I know there are people an this county that probably would have shot a few key people, they are so angry.

HEDRICK SMITH: Did you get any threats?

RON SIMS: I always get threats.

HEDRICK SMITH: I mean serious threats?

RON SIMS: I always get serious threats.

HEDRICK SMITH: Do you take them seriously?

RON SIMS: I cannot restrict my life and what I do based upon people who are angry and people who wish to threaten me. In this particular case, it wasn't pleasant. People were yelling at me. We got a lot of nasty phone calls and emails, and it wasn't fun being on television. And quite frankly, I was abandoned by a lot of people. Even the environmental community at the time were saying, "Ron, you might be too heavy-handed."

HEDRICK SMITH: [*voice-over*] But Sims has not backed down. He asserts that the county ordinance was prompted by scientific analysis of run-off water flows, and he gets solid political backing from an overwhelming majority in King County.

[*voice-over*] What do you say to critics who say, or the people who say, "Look, they've taken my land, in effect. I can only use a third of my land. Two thirds of my land I've got to leave in forest and bushes."

RON SIMS: No one has lost the value or use of their land. There's not one case in King County where anybody's been able to show that.

HEDRICK SMITH: You mean nobody's come forward and said, "I want to do this on my property" and you've turned them down?

RON SIMS: What people have found is that we're not going to allow them to develop their land in terms of building a lot of homes on it, but the use of their land they still enjoy to this day.

HEDRICK SMITH: The rural people are saying, "This burden all falls on us. The city people don't have any burden on them." How do you respond?

RON SIMS: Oh, the city people have far more burdens and restrictions on their land than anyone in a rural area has. Far more. And they have far more regulation on the land.

HEDRICK SMITH: [*voice-over*] Some angry rural property owners filed suit, and a state appeals court has struck down part of Sims's Critical Areas Ordinance. That issue is now before the state supreme court.

RON SIMS: If the supreme court upholds the court of appeals decision, it'll be the abandonment of everything that this state has voted on consistently, which is they want environmental protection here.

HEDRICK SMITH: While the legal drama plays out, the lesson for Ron Sims is unmistakable.

RON SIMS: We will never recover Puget Sound if we don't get a hold of the stormwater. I never imagined that that body of water would just fundamentally be unhealthy for whales and for salmon and all the things that make it a rich, wonderful environment. We may- in the next couple of decades, when I'm 80 years old, if we don't do anything, people will say, "You, your generation, you lost it. You weren't willing to step up and save it."

HEDRICK SMITH: Back on the East Coast, near Chesapeake Bay, the problems of development sprawl that King County is fighting have played out in the suburbs of Washington, D.C. Already, 17 million people live in the Chesapeake Bay watershed. In recent years, 10,000 more moved in every month, and every month, 3,000 acres of forest were lost to development.

The sprawl took off decades ago here in northern Virginia, about five miles south of the Potomac River, in a suburb of Washington called Tysons Corner. Today, Tysons is a case study in the harmful impact of unchecked growth. But 60 years ago, Tysons was just a rural crossroads with a country store.

JOHN TILGHMAN HAZEL, Jr., Land Owner and Attorney: As World War II ended, it was a land of dairy farms and truck farms and abandoned farms and relatively little development. And it was wide open. The government then, the political leaders then, the business leaders were all in favor of doing what was necessary to accommodate the growth that was coming.

HEDRICK SMITH: And for growth to happen, what developers needed was infrastructure- sewers and roads, and especially a highway around Washington, D.C., called the Beltway.

JOHN TILGHMAN HAZEL, Jr.: When you put the Beltway at exactly the location it was, which created about 1,800 acres in the center of those- in the convergence of those roads, you had a fabulous development site.

HEDRICK SMITH: With taxpayers footing the bill for infrastructure, Tysons became a transportation hub, a commercial center and a multi-billion-dollar bonanza for developers.

CHRIS MILLER, Piedmont Environmental Council: The basic approach of most land speculators who are- who are the site developers is to buy a piece of land that's farmland and that is zoned as farmland and taxed as farmland-

HEDRICK SMITH: [*on camera*] So it's cheap.

CHRIS MILLER: It's cheap- and then get it re-planned and rezoned as a subdivision with some retail and commercial components. And the land value will go up dramatically.

HEDRICK SMITH: So the formula is buy land cheap from farmers, get the county and the state to put in the roads, the sewers, the schools, all the stuff that makes it attractive-

CHRIS MILLER: Yeah.

HEDRICK SMITH: -and then turn around and sell it for commercial or residential at 30, 40 times the cost.

CHRIS MILLER: That's correct.

HEDRICK SMITH: [*voice-over*] The formula worked like magic for Tysons. Over the next 45 years, it became one of America's largest commerical developments and most successful retail centers. Now 120,000 people work at Tysons every day.

CLARK TYLER, Tysons Corner Task Force: Tysons is the size of downtown Boston or Phoenix. There is nothing in this country of the scale and size and complexity of Tysons.

BILL LECOS, Fairfax County Chamber of Commerce: Tysons Corner is one of the most successful office centers in the country, one of the most successful retail centers in the country. And the combination of those two factors make it the economic engine for Fairfax County, and really northern Virginia.

HEDRICK SMITH: An economic engine driven by America's love affair with the automobile.

BILL LECOS: In Tysons Corners, you drive in for breakfast and you get into your car and you drive to your first meeting. Then you drive to the next meeting. And then, you know, if I have to take some checks to the bank, even though it's, for a good golfer, barely a long nine iron, you got to get back in your car and drive back. There's no way in Tysons Corners that anybody gets around without a car.

HEDRICK SMITH: The car built Tysons. It also built gridlock that is now strangling Tysons. Almost no one lives here. Practically everyone commutes.

BILL LECOS: The highway system is choked, and we can't sustain the model of sprawl in support of the economic engine that has happened over the last 20 years.

HEDRICK SMITH: [*on camera*] Can't sustain the model. You mean Tysons Corner has sort of reached the limit?

BILL LECOS: Tysons Corner is about as built out as it can be, if dependent on the automobile, because it exacerbates what's already a complicated but troubling environmental future.

HEDRICK SMITH: [*voice-over*] Environmentalists call Tysons a nightmare for the Potomac River and Chesapeake Bay. It's a fortress of impervious surfaces.

CLARK TYLER, Tysons Corner Task Force: You look at Tysons and there is now today, as we are sitting here today, there's about 46 million square feet of development in Tysons. In addition to that, there is 40 million square feet of parking.

HEDRICK SMITH: [*on camera*] Forty million?

CLARK TYLER: Forty million square feet of parking. So the amount of development and the amount of parking is about equal, and that translates into close to 170,000 parking spaces. And when we talk about impervious surfaces, I mean, that's just unbelievable.

STELLA KOCH, Audubon Naturalist Society: When you put down an endless amount of concrete parking lots and rooftops, rain hits it, it washes really quickly into the streams. It's going to cut away at those stream banks. It's going to pick up sediment. It's going to be carrying all kinds of pollutants in it. It's going to go flying down into the Potomac, and the Potomac feeds into the Chesapeake Bay. And everything starts in these little streams, so every time you lose a little stream, you lose one more healthy piece of the Chesapeake Bay ecosystem.

HEDRICK SMITH: [*voice-over*] What many see as the ecological disaster of Tysons epitomizes the collision of development and clean water nationwide. More than three quarters of America's population live on or near our waterways. The plague of Tysons-style sprawl has recently threatened neighboring Loudon County. But here in Loudoun, environmental leaders fashioned a new tactic to counter aggressive development and to protect Chesapeake Bay.

CHRIS MILLER, Piedmont Environmental Council: Getting up in front of a crowd and saying, "The bay's in tough shape and the pollution's getting worse and we've got to change our lifestyles to save it" really doesn't get you anywhere. But you can get people to do the things that we need to do to save the bay if we can train them in ways that correspond to what they really care about.

HEDRICK SMITH: In Loudon, what people care most about is traffic and taxes, two issues the environmentalists leveraged to launch a political campaign against developers in 2006.

TELEVISION COMMERCIAL: How do big developers plan to deal with our traffic problems? They want to build more homes and apartments in our area, 33,000 more. That would mean thousands of more cars and more traffic.

HEDRICK SMITH: Tapping into local concerns, citizen activists organized to carry the fight.

LAURA TEKRONY, Local Activist: It resonated a lot with residents when we spoke about transportation issues, we spoke about tax increases that would occur, and when we spoke about schools, how our children would constantly have to change boundaries.

CHERYL HUTCHISON, Local Activist: I think a lot of us got involved just for the whole quality of life issue, and when it went from- the 33,000 homes meant an additional 300,000 car trips on the local roads. It meant higher taxes, the schools that had to be built, the roads that needed to be built. It was suburbanizing an area that was never meant to be suburban.

HEDRICK SMITH: [*on camera*] Did all this public outpouring of outrage stop or slow down this aggressive growth?

CHRIS MILLER: The public response was so overwhelming that even the board of supervisors that was elected with the support of the development community ended up turning down the proposals that they, the board, had submitted in the first place.

HEDRICK SMITH: So they backed off totally.

CHRIS MILLER: They backed off totally. And then in the election that immediately followed that decision to back off, they all lost. Every one of those candidates was voted out of office.

HEDRICK SMITH: They got wiped out?

CHRIS MILLER: They got wiped out.

HEDRICK SMITH: [*voice-over*] That victory in Loudon underscored that land use is a key to protecting the environment.

[*on camera*] People talk about saving Chesapeake Bay, and you've got organizations that are talking about, "Let's have a campaign bay-wide." But listening to you, the nuts and bolts of this thing sounds as though they have to be fought out on a local basis, county by county.

CHRIS MILLER: I think the conservation movement has to move away from wholesale ideas to retailing what we're talking about, things that people deal with every day, traffic, schools, the lack of access to the kinds of parks and open space that people want on a day-to-day basis, rising taxes to pay for the costs the developers weren't paying for,

HEDRICK SMITH: And the bay is going to benefit, but it's not the opening argument.

CHRIS MILLER: It's all about making the protection of the bay a retail issue. What we need to market is the solutions, and market in a way that people will embrace them, not market the problem.

HEDRICK SMITH: [*voice-over*] To help save vulnerable waterways like the Potomac River and Chesapeake Bay, environmentalists are also touting a new eco-friendly development model known as "smart growth." One of the nation's showcases for smart growth is right here in Arlington, Virginia, a short subway ride across the Potomac from Washington and just a few miles from Tysons Corner. Smart growth is making suburban living look a lot more like city living with a human touch.

[*on camera*] What's fascinating is, where are we? Look, up here, for crying out loud.

STEWART SCHWARTZ, Coalition for Smarter Growth: You're in a downtown, a new downtown in Arlington County.

HEDRICK SMITH: [*voice-over*] I got a tour from smart growth advocate Stewart Schwartz.

STEWART SCHWARTZ: It's a suburb that's grown up into a city, an extension of D.C.'s downtown. Arlington had no choice but to build up to compete with the outer suburbs. And from an environmental perspective, we love this sort of place because we're building here on old parking lots instead of building out in forests and farms.

HEDRICK SMITH: Arlington's strategy is to focus development not around the car but around Washington's mass transit system, known as Metro.

STEWART SCHWARTZ: Around each of the stations, we call it a network of livable communities. And increasingly, the world's cities are being built this way, using transit as the spine for development.

HEDRICK SMITH: [*on camera*] What's been the track record in Arlington County in terms of jobs, development, congestion on the streets?

STEWART SCHWARTZ: They've had an explosion of development in the corridor over the last 30 years. They've had a tripling and quadrupling of the number of residents, the number of jobs in the corridor, and it's all been achieved without an increase in traffic.

HEDRICK SMITH: [*voice-over*] The key to smart growth is high-density living combined with mixed-use development- commercial, retail and residential all mixed together.

[*on camera*] You know, looking at this, there are high-rise buildings here. I mean, to a certain extent, this kind of looks like Tysons. It's our image of it- lots of concrete or brick or whatever.

STEWART SCHWARTZ: But very different. Great public spaces here like this park, you have shopping you can walk to right there, a great bus stop here, outdoor cafes. Probably two to three times the number of people living here as live in Tysons Corner. And in fact, the future of Tysons is going to be in having more people live in Tysons Corner, and they make Tysons Corner look a lot more like Arlington.

HEDRICK SMITH: [*voice-over*] In fact, at Tysons, there's been a tectonic shift in the mindset of business leaders. With the commercial luster of Tysons fading, they are now banking on the planned arrival of Metro's rapid rail to spur a new kind of redevelopment.

BILL LECOS, Fairfax County Chamber of Commerce: We can't continue to accommodate cars and the number of cars that we have in the past. I mean, the choice moving forward is you do more of the same and get what you got, or you change what you did and build to a new goal, if you will, a new culture. And that culture will be focused on mass transit. It's, in essence, designing a place that's much more at a human scale, pedestrian-friendly, that'll be the key to the success of Tysons for the next 20 years.

HEDRICK SMITH: It's a welcome change to advocates of Chesapeake Bay. Remaking Tysons Corner gives local government a chance to fix the stormwater system, create parks and restore green zones and local streams feeding into the Potomac and the bay.

CHRIS MILLER, Piedmont Environmental Council: So growth is happening and we have to accommodate it, but we can do it better. We can plan it better. We can put it in better locations. We can put it in places where we can deal with the impacts in the most effective way.

HEDRICK SMITH: [*on camera*] Are you saying we have a choice?

CHRIS MILLER: Always. We have a stark choice. We have a very dramatic choice. If we do it right, the effects on the environment are reduced by half or more. If we do it wrong, the possibility of actually losing the Chesapeake Bay goes up dramatically.

HEDRICK SMITH: [*voice-over*] We do have choices to make. And from what I saw and heard on my journey, time is much more urgent and the stakes are much higher than I had once realized.

TOM HORTON, Bay Author and Reporter: We are not going to make it the way we are going now. I mean, if you ask me for today's grade- failure. It doesn't mean we can't redouble our effort, you know. We can re-enroll, try again. But yeah, it's a failure.

WILL BAKER, Chesapeake Bay Foundation: There's no question that the condition of the Chesapeake Bay is like the canary in the coal mine. It is a symbol. It is an indicator of what we are now learning to expect in any body of water nationwide and across the planet.

HEDRICK SMITH: The danger signs are everywhere- dead zones, dying young whales, intersex in male fish, the growing risk of serious health problems for humans.

JAY MANNING, Director, Wash. Dept. of Ecology: The '70s were a lot about, "We're the good guys. We're the environmentalists. We're going to go after the polluters." And it's not really about that any more. It's about the way we all live. And unfortunately, we are all polluters. I am. You are. All of us are.

HEDRICK SMITH: Success is possible, but the lesson driven home to me again and again is that the key is public engagement.

Gov. CHRIS GREGOIRE (D), Washington: If the public is not engaged, in Puget Sound, for example, we will fail. We will fail. I have no confidence whatsoever we can get the job done unless and until everybody steps up, accepts responsibility and becomes part of the solution.

KATHY FLETCHER, People for Puget Sound: You can't expect the Clean Water Act alone to do the job for Puget Sound or Chesapeake Bay or any other water body. You have to piece together clean water, clean air and taking care of the land. And at this point in our history, we have to restore what we've screwed up.

HEDRICK SMITH: Water pollution has slipped off our radar screen in the face of other, seemingly more urgent crises. But pollution is a ticking time bomb. It's a chronic cancer that is slowly eating away natural resources that are vital to our very survival.

ROBERT LAWRENCE, M.D., Johns Hopkins School of Public Health: The estuaries and the wetlands are worth vastly

more money than we have acknowledged. I mean, if we could calculate and persuade the public about how valuable the wetlands are in terms of the web of life, we would be guarding them like the family jewels instead of using them as our great sewage dump.

J. CHARLES FOX, EPA Asst. Administrator, 1998-'01: We have a window of time on a whole range of issues, where if we do not succeed in taking action in the next 20 to 20 years on a whole range of issues, we are, in fact, putting our planet on a trajectory that it will be very, very hard to undo. And I say that because the decisions we make are going to have a profound effect as to our planet's future over the next 100 years.

POISONED WATERS

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- I swallowed a casette Walkman.

ANNOUNCER: They are schizophrenic.

- Bent my head back and pushed it down my throat.

ANNOUNCER: Out of prison-

- a needle, a (INAUDIBLE) and a rope.

ANNOUNCER: -with nowhere to go.

- Became homeless for two years. That was rough.

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