Chesapeake Bay Program

Chesapeake Executive Council

Chesapeake Bay Basinwide Toxics Reduction And Prevention Strategy

In January 1989, the Chesapeake Executive Council adopted the *Chesapeake Bay Basinwide Toxics Reduction Strategy* in fulfillment of the 1987 Chesapeake Bay Agreement commitment and pledged to reevaluate the Strategy in 1992. The Strategy used the requirements of the 1987 Clean Water Act as a foundation for action and initiated a multi-jurisdictional effort to better define the nature, extent, and magnitude of toxics problems.

The reevaluation has shown that significant steps toward controlling and reducing inputs of chemical contaminants to the Bay system have been taken over the past decade. Findings from the reevaluation revealed:

- In some locations, toxics problems exist in the Chesapeake Bay. The nature, extent, and severity of toxic impacts vary widely throughout the Bay: a few well-known areas have serious, localized problems; and, some other regions that were previously thought to be uncontaminated have shown some toxic effects.
- No evidence was found of severe, systemwide responses to chemical contaminants similar in magnitude to the observed effects throughout the Bay due to excessive levels of nutrients, such as declines in underwater grasses and widespread low dissolved oxygen conditions.
- Existing programs are reducing inputs of chemical contaminants to the Chesapeake Bay.
- Concentrations of some chemical contaminants in fish, shellfish, wildlife and their habitats are on the decline although elevated levels are observed in several urbanized regions.
- Widespread areas have low levels of chemical contaminants below thresholds associated with adverse effects on the Bay's living resources, but elevated above natural background levels. The long term effects from these low levels remain unclear.

Much remains to be done to address the known and potential problems identified by the reevaluation.

In September 1993, the Chesapeake Executive Council directed the Chesapeake Bay Program to revise the existing basinwide strategy through a process that incorporated broad public involvement in the strategy's development, review, and implementation. The Executive Council further directed that the strategy use a regional focus to address toxic problem areas, focus toxics assessments in direct support of

management actions, and increase emphasis on pollution prevention.

This basinwide strategy is just one of a multi-faceted set of implementation plans, policies, and strategies directed towards addressing the many environmental and resource management issues facing the Chesapeake Bay. Although comprehensive itself, this basinwide strategy must be viewed as just one part of a much larger restoration and protection program.

Strategy Goal

Through implementation of this basinwide strategy, the signatories commit to the following:

> *Our goal is a Chesapeake Bay free of toxics by reducing or eliminating the input of chemical contaminants from all controllable sources to levels that result in no toxic or bioaccumulative impact on the living resources that in habit the Bay or on human health.*

A series of objectives addressing components of the overall strategy goal and the supporting commitments necessary to achieve those objectives and, ultimately, the strategy goal are presented by four areas of emphasis--regional focus, directed toxics assessments, regulatory program implementation, and pollution prevention.

The strategy commitments reflect the early stages of a shift in emphasis from a narrow focus on point source discharges to surface waters to those sources identified as significantly contributing to chemical contaminant loadings to the Bay--stormwater runoff and atmospheric deposition. The varying level of specificity in the reduction targets reflects our current ability to establish a baseline and measure progress as well as our current understanding of the origin of loadings themselves in the case of atmospheric deposition. As more comprehensive baselines are established, sources shown to be major contributors of chemical contaminant loadings will be further targeted for reductions.

Regional Focus

The most severe chemical contamination problems in the Chesapeake Bay are generally limited to those areas located near urban centers close to the Bay--the Patapsco, Anacostia, and Elizabeth rivers. Through the strategy reevaluation, other Bay habitats were identified where lower concentrations of chemical contaminants have a chronic effect (i.e., reduced growth) and/or an acute impact (i.e., death) or where present activities may lead to the development of chemical contaminant-related problems if action is not taken now. The strategy focuses on the identification and targeting of Regions of Concern (areas with known chemical contaminant-related impacts) and Areas of Emphasis (areas with the potential for serious chemical contaminant-related impacts) as well as areas with low potential for adverse impacts and areas where there is not enough data to determine whether there are any chemical contaminant-related impacts present. Along with identification of Regions of Concern, there is a need to establish a process for involving stakeholders and the local communities in developing and implementing the actions necessary to achieve a set of goals for the designated Regions of Concern consistent with the goal of the strategy.

Objective: *Direct reduction and prevention actions toward regions with known toxic problems as well as*

areas where significant potential exists for toxic impacts on living resources and habitats, and more directly involve the locally affected community and stakeholders.

To accomplish this objective, the signatories commit to:

- By October 1994, develop preliminary Regional Action Plans for the Elizabeth River, Baltimore Harbor, and the Anacostia River Regions of Concern following the adopted Chesapeake Bay Regional Action Plan Development Guidelines, complete the plans by the 1995 meeting of the Chesapeake Executive Council, and begin implementation following adoption.
- By July 1996, evaluate available data through the Chesapeake Bay Regions of Concern identification protocol, determine whether additional Regions of Concern should be designated, and publish a revised characterization of Bay and tidal tributary habitat status with regard to evidence for the presence of chemical contaminant-related impacts. Every three years, this same evaluation of data will be conducted using data collected since the previous evaluation.
- Develop, adopt, and begin implementation of Regional Action Plans within two years of designation of additional Regions of Concern.
- By January 1997, identify and implement necessary pollution prevention actions in the identified Areas of Emphasis to eventually eliminate the potential for chemical contaminant-related impacts; take actions necessary to ensure future protection of Areas with Low Probability for Adverse Effects; and initiate necessary assessments in Areas with Insufficient Data to characterize the habitat status through the protocol. Within six months of each subsequent triennial review of available data, this same process will be followed and identified actions implemented.

Directed Toxics Assessments

The strategy reevaluation revealed that the potential exists for low levels of chemical contaminants to adversely affect aquatic organisms in many Bay habitats. Future assessments must focus on the extent to which and how low level chemical contaminant exposure (including the potential for additive and synergistic effects from multiple chemical contaminants) poses a risk to the Bay's living resources. Assessments must also be directed toward better quantifying sources of these chemical contaminants and understanding the relative importance of the various sources.

Objective: *Direct toxics assessments to improve our knowledge of the nature and extent of toxic impacts in support of management decisions for the reduction and prevention of chemical contaminant loadings.*

To accomplish this objective, the signatories commit to:

- By January 1995, establish and support a management/scientific framework that provides for comprehensive peer reviews of technical reports, research proposals, budget initiatives, and strategy implementation products; identifies management issues requiring technical information building on the findings from the reevaluation; prioritizes, plans, and implements research strategies to address the identified management issues; monitors and evaluates the directed research efforts; and synthesizes and communicates the management implications of research findings to the Chesapeake Bay community.
- Support and conduct the research identified through the management/scientific forum as necessary to determine the extent to which and how the low level concentrations of chemical contaminants

are causing an impact on the Bay's living resources.

- Support and conduct the necessary biological and chemical assessments, including ambient toxicity and community structure, of Bay habitats to ensure future characterization of all tidal Bay habitats through the Regions of Concern identification protocol.
- By July 1997, revise and update the Chesapeake Bay Basinwide Toxics Loading and Release Inventory; publish technical updates to the Inventory as data becomes available; and develop an analysis framework, within the Inventory, for evaluation of the relative importance of various sources to identified Regions of Concern and Areas of Emphasis as well as their relative contributions to the widespread, low levels of chemical contaminants found throughout Bay habitats. Every three years, revise and update the inventory using data and information collected since the previous inventory update.

Regulatory Program Implementation

Building on the progress of regulatory program implementation to date, reduction and prevention actions need to be consistent with and supplement existing state and federal legislative and statutory regulatory mandates. State, federal, and local regulatory programs need to be targeted towards Bay toxics problems identified through the strategy reevaluation and should, therefore, place emphasis on designated Regions of Concern, Chesapeake Bay Toxics of Concern**1**, and inventoried sources with significant chemical contaminant loadings or releases.

Objective: *Reduce chemical loadings and releases from sources contributing to Bay chemical contaminant-related impacts through actions consistent with the existing state and federal environmental statutes.*

To accomplish this objective, the signatories commit to:

- Encourage opportunities for alternative approaches to and implement incentives for achieving the chemical loading and release reductions required under federal and state laws and regulations, with emphasis directed towards stormwater runoff, atmospheric deposition, and acid mine drainage.
- Work towards full compliance with all environmental regulations addressing toxic chemicals at all industrial, commercial, municipal, and federal facilities in the Chesapeake Bay basin.
- Eliminate acute and chronic toxic impacts of wastewater discharge by 2005 throughout the Chesapeake Bay watershed.
- By July 1997, establish more complete loadings baselines and source identification for stormwater runoff, atmospheric deposition, and acid mine drainage, and set reduction targets from those baselines to be achieved over the next decade.

Objective: *Focus chemical-specific reduction and prevention actions on existing and potential chemical contaminant-related problems identified through the strategy reevaluation.*

To accomplish this objective, the signatories commit to:

- By March 1995, reevaluate and revise as necessary the Chesapeake Bay Toxics of Concern list and the Chesapeake Bay Chemicals of Potential Concern list through a risk-based ranking system. Every three years, this same reevaluation and revision process will be conducted.

- By July 1996, plan and begin implementation of chemical specific strategies necessary to reduce and eventually eliminate any toxic or bioaccumulative impact due to the listed Chesapeake Bay Toxics of Concern. Within a year of listing any new chemicals as Chesapeake Bay Toxics of Concern, this same planning and implementation process will be followed.
- By December 1997, EPA will establish criteria necessary to protect freshwater, estuarine, and marine aquatic life including sediment quality criteria, where appropriate, for the existing list of Chesapeake Bay Toxics of Concern. For any newly listed Toxics of Concern, EPA will consider development of criteria.
- State signatories will initiate the process to adopt water quality standards for Chesapeake Bay Toxics of Concern upon EPA publication of aquatic life criteria for any Chesapeake Bay Toxics of Concern. Such adoption will be sought in the triennial review following EPA's publication of aquatic life criteria.

Pollution Prevention

The signatories recognize pollution prevention as the preferred approach to reducing risks to human health and living resources due to exposure to chemical contaminants within the Chesapeake Bay watershed and as the principal means to offset increases in loadings due to land use changes and population growth in the Bay basin. Pollution prevention is a hierarchy of approaches directed ultimately towards reducing or eliminating the amount of chemical contaminants at the source of production or preventing them from entering the environment or a waste stream. Source reduction is the preferred method when practical, followed by recycling/reuse, and energy recovery. Treatment, followed by safe disposal, should be used as a last alternative. Source reduction addresses all sources: point and nonpoint, industrial and agricultural, urban and suburban.

The basinwide strategy builds and expands upon existing pollution prevention goals established by national pollution prevention programs including:

- **33/50 Program:** voluntary initiative by the U.S. Environmental Protection Agency seeking commitments from companies to reduce their reported releases and off-site transfers of 17 high-priority chemicals by 33 percent by 1992 and 50 percent by 1995 from the 1988 levels reported to EPA's national Toxics Release Inventory.
- **Presidential Executive Order 12856:** requires federal facilities to annually report releases and off-site transfers as part of the national Toxics Release Inventory under the Emergency Planning and Community Right-to-Know Act of 1986 and sets a voluntary goal for a 50 percent reduction in releases and off-site transfers of the toxic chemicals listed under section 313(c) of the Act or other toxic pollutants identified by individual facilities by 1999 from 1994 levels.
- **National Integrated Pest Management Goal:** joint U.S. EPA, U.S. Department of Agriculture, and U.S. Food and Drug Administration commitment to a goal of implementation of integrated pest management on 75 percent of all agricultural lands in the U.S. by 2000.

Within these national pollution prevention programs, the strategy places additional emphasis on the Chesapeake Bay Toxics of Concern--chemical contaminants identified by the Chesapeake Bay Program that are either adversely impacting the Bay system or for which the reasonable potential to do so exists. The Toxics of Concern are chemicals ranked high due to their toxic effects, fate, persistence in the environment, and exposure potential. The listed chemicals are targeted for additional research,

monitoring, and assessment, and for evaluation of the need to strengthen existing or establish new regulatory control and prevention actions.

Facility-Based Pollution Prevention

Objective: *Promote pollution prevention education and technical assistance programs within all levels of government--federal, state, and local--throughout the Chesapeake Bay watershed, and aid commercial and industrial establishments with incorporating pollution prevention actions into their daily business activities.*

To accomplish this objective, the signatories commit to:

- By 2000, achieve a 75 percent voluntary reduction in releases and off-site transfers for treatment and disposal of Chesapeake Bay Toxics of Concern and chemicals required for reporting under section 313(c) of the Emergency Planning and Community Right-to-Know Act, from a 1994 baseline, for federal facilities within the Chesapeake Bay basin.**2**
- Work to enlist industry in a voluntary, cooperative Chesapeake Bay Pollution Prevention Program that will be modeled after the successful 33/50 Program and will include:
- A target of a 50 percent reduction by the year 2000 in the reported releases and off-site transfers for treatment and disposal of chemicals required for reporting under section 313(c) of the Emergency Planning and Community Right-to-Know Act from all Chesapeake Bay basin industries required to report under the Act;
- A target of a 75 percent reduction by the year 2000 in the reported releases and off-site transfers for treatment and disposal of the Chesapeake Bay Toxics of Concern from all Chesapeake Bay basin industries required to report under the Act; and
- By the next annual Chesapeake Executive Council meeting, an evaluation, in consultation with industry representatives, of these targets, establishment of appropriate baselines, and a commitment to achieve higher targets if feasible.
- By 2000, achieve voluntary participation of 75 percent of industrial facilities and commercial establishments within the Chesapeake Bay basin, with emphasis on small businesses and conditionally exempt small quantity generators, in the implementation of pollution prevention programs directed towards further reducing the use and generation of potentially toxic chemicals.
- By 2000, achieve voluntary participation by all state and local governments within the Chesapeake Bay basin in the implementation of pollution prevention programs aimed at further reducing the use and generation of potentially toxic chemicals at their facilities.

Pesticide Management

Pesticides (i.e., insecticides, herbicides, fungicides, and rodenticides) have made a significant contribution to modern society. The appropriate use and proper application of pesticides can effectively reduce or altogether prevent runoff or leaching of pesticides from the site of application into local waterways where impacts to aquatic organisms and wildlife can occur.

Integrated pest management is a sustainable approach which combines the use of biological, cultural, physical, and chemical tactics in a way that minimizes economic, health, and environmental risks.

Integrated pest management involves regular monitoring to determine if and when treatments are needed based on biological and/or aesthetic thresholds to keep pest numbers low enough to prevent intolerable damage or annoyance.

Objective: *Manage the use of pesticides to prevent adverse effects on living resources and human health within the Chesapeake Bay basin.*

To accomplish this objective, the signatories commit to:

- By 2000, establish voluntary integrated pest management practices on 75 percent of all agricultural, recreational, and public lands within the Chesapeake Bay basin.
- By 1995, establish a goal for implementation of integrated pest management practices on commercial and residential lands within the Chesapeake Bay basin.
- By 2000, implement collection and disposal programs, establish regional-based pesticide container recycling programs, and implement best management practices programs in each Chesapeake Bay jurisdiction throughout the watershed.

Consumer/Household Wastes

Chemicals are an integral part of modern life. They can be found throughout most homes in the form of cleaning products, paints, pesticides, and automobile maintenance aids. After use, these products, containing toxic components, end up in the local environment, municipal incinerators, landfills, or waste water treatment plants, impacting both human health and the environment. With the increasing numbers of new products and higher diversity of users of these products, consumer product chemical wastes pose a significant risk when improperly disposed.

Objective: *Reduce consumer use of toxic chemicals and improper disposal of consumer product chemical wastes.*

To accomplish this objective, the signatories commit to:

- By January 1996, develop and begin conducting a basinwide communication and educational program directed towards reducing consumers' use of products containing chemicals harmful to the environment, thereby reducing generation and improper disposal of the resultant wastes, and increasing opportunities throughout the Chesapeake Bay watershed for proper collection and disposal of consumer product chemical wastes.

Strategy Implementation

Objective: *Enable Bay Agreement signatories to monitor progress towards the strategy's goal at the jurisdictional and basinwide level and use that information to direct and focus their strategy implementation actions.*

To accomplish this objective, the signatories commit to:

- By 1996, establish and incorporate a basinwide system for measuring progress towards the strategy's goal and commitments into existing state and federal agency progress reporting systems.

- By 1997, report on progress towards the strategy goal and implementation of the commitments.
- By 1999, reevaluate and revise, as necessary, the basinwide strategy.

Adoption Statement

We, the undersigned, adopt the *Chesapeake Bay Basinwide Toxics Reduction and Prevention Strategy*, in fulfillment of the Directive No. 93-2 Toxics Reduction Strategy Reevaluation:

> ". . . to revise, by the next annual Council meeting, the existing Basinwide Toxics Reduction Strategy through a process that incorporates broad public involvement in the Strategy's development, review, and implementation."

Our goal is a Chesapeake Bay free of toxics by reducing or eliminating the input of chemical contaminants from all controllable sources to levels that result in no toxic or bio accumulative impact on the living resources that inhabit the Bay or on human health.

Through implementation of this strategy, we agree to focus our reduction and prevention actions towards regional areas with known toxics problems as well as areas where significant potential exists for toxic impacts on living resources and their habitats. We will direct toxics assessments towards improving our knowledge of the nature and extent of toxic impacts in support of management decisions for the reduction and prevention of chemical contaminant loadings. We will reduce chemical loadings and releases from sources contributing to Bay chemical contaminant-related impacts through actions consistent with the existing state and federal environmental statutes. We will promote pollution prevention education and technical assistance programs within all levels of government throughout the Chesapeake Bay watershed. We commit to more directly involving the regionally and locally affected communities and stakeholders in the implementation of the actions necessary to reach our goal.

Date: October 14, 1994

SIGNERS:

For the Commonwealth of Virginia--*George F. Allen, Governor*

For the State of Maryland--*William Donald Schaefer, Governor*

For the Commonwealth of Pennsylvania--*Robert P. Casey, Governor*

For the District of Columbia--*Sharon Pratt Kelly, Mayor*

For the United States of America--*Carol M. Browner, Administrator, U.S. Environmental Protection Agency*

For the Chesapeake Bay Commission--*Elmo S. Cross, Jr., Chairman*

1 - The existing Chesapeake Bay Toxics of Concern list includes the following chemicals: atrazine, benz[a]anthracene, benzo[a]pyrene, cadmium, chlordane, chromium, chrysene, copper, fluoranthene, lead, mercury, naphthalene, polychlorinated biphenyls, and tributyltin.

2 - If a formal pollution prevention program established a baseline between 1988 and 1994, progress can be reported from that earlier baseline.

Strategy Goal Definitions

Bay Free Toxics: The condition of the Bay without toxic or bioaccumulative impacts, caused by chemical contaminants introduced to the system from controllable sources
This does not mean that the Bay, its tributary waters, or sediments will be devoid of all chemical contaminants that have the potential to cause toxic or bioaccumulative impacts. Chemicals will always be present due to their introduction by natural processes, providing trace amounts of elements that are needed to sustain the Bay's living resources. Chemicals may also persist in the Bay system due to historical, long-term inputs from sources that have either ceased to exist or have been controlled to the limit of technology, or through decisions not to remove in-place contaminated sediments due to potential for increased adverse effects on living resources through removal actions.

Controllable Sources: Efforts to reduce toxic impacts are directed solely at point sources, nonpoint sources, and in-place contaminated sediments where anthropogenic activities lead to the input of chemical contaminants into the Bay and/or its tributaries.
This term excludes all natural processes, such as mechanical or chemical weathering of rock, which leads to trace metal input to surface waters. Controllable sources respond to management and reduction efforts, but the controls applied may not completely eliminate the input of chemical contaminants.

Toxic Impact: Adverse effects caused by exposure to a substance, or combination of substances, including death, disease, behavioral abnormalities, cancer, genetic mutations, physiological or reproductive malfunctions, or physical deformities, in any organism or its offspring, and any resultant impairment of ecosystem function.
Toxic impacts are usually classed under two types: acute (short-term, usually measured as mortality) and chronic (long-term, with more subtle and harder to measure responses, such as reduced growth or productivity). An example of ecosystem function impairment is a change in prey selection by predators.

Bioaccumulative Impact: Adverse effects caused by the uptake and retention of chemicals from the surrounding media and food, including death, disease, behavioral abnormalities, cancer, genetic mutations, physiological or reproductive malfunctions, or physical deformities, in any organism or its offspring.
The potential for bioaccumulative impacts may increase through the food chain, due to the process of biomagnification, when the concentration of a chemical increases in different organisms occupying successive trophic levels.

Human Health: Protection of human beings from adverse impacts, caused by ingesting chemically contaminated finfish or shellfish, is achieved by maintaining ambient chemical concentrations below applicable water quality standards, and maintaining chemical concentrations in edible portions of finfish and shellfish below acceptable tissue concentrations.
Both of these sets of standards have inherent levels of acceptable risk based on several assumptions, including population size and exposure, the chemical's bioconcentration factor, and the amount of tissue consumed over a given time period.

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