



CHESAPEAKE ENVIRONMENTAL PROTECTION ASSOCIATION, INC.
P.O. Box 117, Galesville, Maryland 20765

NEWSLETTER

Fall 2013

PRESIDENT'S MESSAGE

By Al Tucker, President, 2013



Water availability may not seem a topic that's important to discuss, particularly when we have had a summer that was wet, and especially after a week of almost constant rain. Yet, even over most of the summer, the annual rainfall for Maryland was below normal. Only the latest period of rain helped to bring the state up to normal precipitation. CEPA has had a long abiding interest in the

future of water availability in the Chesapeake Bay watershed. In the past, we have focused on the availability of groundwater, primarily in aquifers. However, this focus seemed to narrow our viewpoint to thinking about the quantity of water available for wells. This year CEPA has decided to broaden the topic to assess sourcewater, which is defined as the freshwater available for human use. Freshwater constitutes about 2.5% of the water on earth; the remainder is salt water. Since about 70% of fresh water is frozen, and a lot more of it is moisture in the soil or is too deep to access, less than 1% of the world's fresh water (~0.007% of all water on earth) is accessible for direct human uses. This is the water found in lakes, rivers, reservoirs and those underground sources and aquifers that are shallow enough to be tapped at an affordable cost. Only surface water and surficial aquifers are regularly renewed by rain and snowfall, and are therefore available on a sustainable basis. The utilization of groundwater in confined aquifers is not considered sustainable, since it was captured up to millions and tens of millions of years ago. Groundwater is like a rainy-day fund; it should be used sparingly in normal times so that it can be used during times of drought.

Relatively speaking, Maryland is rather water-rich compared to the rest of the country and the world. Yet, the riches are not uniformly distributed across the state. This discrepancy became evident during the most recent multi-year drought from 1998 to 2002. During this period reservoirs that supplement low flows in the Potomac were almost completely drained. Washington, Montgomery, Prince Georges and Fairfax counties were hard hit and placed under severe water use restrictions, since the Potomac is their major source. Some towns had to have water delivered and building moratoria were

put in place. It was this particular drought that energized the Maryland legislature to establish the Water Advisory Board, which produced a report entitled Water for Maryland's Future (Jul 2008). This report is more often referred to as the Wolman report. (Prof Wolman was a principal speaker at the 2008 CEPA Groundwater Forum.)

You may ask, what is the status of actions recommended in the Wolman report? Lack of funding has been the primary impediment; however, in 2010 some funds were allocated to study the aquifers in the coastal plain and this fiscal year studies in the karst region (west of the fall-line) were initiated. Also progress was made on developing the Aquifer Information System, which catalogs existing hydrologic data and presents it in a format accessible by county planners and well permitting agencies. Yet, little progress has been made in developing an overall view of existing water resources. Without an overarching view, it is difficult to know if Maryland is using water in a sustainable fashion. This lack of information introduces uncertainties and challenges for water resource planning.

Perhaps the most pressing uncertainty is how climate change will affect the sustainable use of our water supply. A recent National Resource Defense Council Report¹ states that more than 1 in 3 counties in the United States could face a "high" or "extreme" risk of water shortages due to climate change by the middle of the 21st century. It concluded that 7 in 10 of the more than 3,100 U.S. counties could face "some" risk of shortages of fresh water for drinking, farming and other uses. It includes maps that identify the counties at risk of shortages.

Population growth is the major factor which drives increasing demand for water for municipal use and for electricity generation. Even as population grows, global climate change threatens to reduce water supplies, due to decreased rainfall and other factors, compared to levels in the 20th century. The report establishes "water supply sustainability risk index" that accounts for water withdrawals, projected population growth, susceptibility to drought, projected climate change and other factors for individual U.S. counties for the year 2050. It takes into account renewable water supply through precipitation using the most recent downscaled climate change projections and it estimates future withdrawals for various human uses. The resulting index implies that an "extreme" risk of water shortages may develop in 412 counties, mostly in southern and southwestern states and in southern Great Plains states. That sounds as if it might not affect us, but most of Maryland is included in the "high risk" category. What's worse is that Montgomery, Prince Georges, and Anne Arundel Counties are among the 412 counties where an "extreme risk" of water shortages is expected to occur.

¹ "Climate Change, Water, and Risk: Current Water Demands Are Not Sustainable" (July 2010) <http://www.nrdc.org/global-Warming/watersustainability/>

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What are the state's issues? The population is growing rapidly; the state will add over a million people from the current 5.7 to over 6.8 million by 2050. Unless we can drastically cut household usage, the water supply will have to increase proportionately. These households will require more energy, thereby increasing the demand for water for conventional thermoelectric generation. This is another argument for increasing the renewable energy supply. Hotter, drier summers will cause conventional agriculture, particularly on the Eastern Shore, to rely more on irrigation. Using surface water, especially that within surficial aquifers, reduces stream flows and adversely impacts neighboring ecosystems.

If we have to rely on using groundwater from deep aquifers, then we have to realize that we will be using a nonrenewable resource. This is not a hypothetical issue. At present, Charles County is exploring using water from its deepest aquifer and typically these aquifers are not the best for producing water. The water usually has many dissolved minerals and requires extra processing to make it usable.

Climate, demand, land use, and demographic changes are combining to challenge water management in unprecedented ways. Climate change poses difficult challenges for water management because it nullifies the use of historical data. It introduces increased hydrologic variability and uncertainty. Hence, these conditions suggest that past management practices will become increasingly ineffective.

The competing demands for water among urban population growth, agriculture, industrial development and energy generation will require balanced decisions. Inadequate information will make it difficult to develop water systems and their usage strategies that will increase their resilience to water shortages.

The year 2050 is less than 37 years away; this is a not the time to conduct business as usual. We cannot continue to study the problem, make assessments and develop plans that are not used. Water resource planners should adopt iterative, risk-based, and adaptive approaches to water management.

CEPA has determined that it is time to reassess Maryland's strategies for water resource management and has decided to focus the 2014 Forum on the topic of managing Maryland's sourcewater for the future.

**PROTECTING MARYLAND'S SOURCE WATERS
Role of the EPA and the Federal Government**

By Ron Tate



Article 2

This is the second of a series of articles on protecting our source waters to be published in the CEPA newsletter.

NOTE: Much of the following information is extracted from EPA web sites.

The Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. The basis of the CWA was enacted in 1948 and was called the Federal Water Pollution Control Act, but the Act was

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significantly reorganized and expanded in 1972. "Clean Water Act" became the Act's common name with amendments in 1972. Under the CWA, EPA has implemented pollution control programs such as setting waste water standards for industry. It also set water quality standards for all contaminants in surface waters.

The CWA made it unlawful to discharge any pollutant from a point source into navigable waters, unless a permit was obtained. EPA's National Pollutant Discharge Elimination System (NPDES) permit program controls discharges. Point sources are discrete conveyances such as pipes or man-made ditches. Individual homes that are connected to a municipal system, use a septic system, or otherwise do not have a surface discharge do not need an NPDES permit; however, industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters.

The Safe Drinking Water Act (SDWA) includes important provisions that require or otherwise promote actions at the national, state, and local levels to protect source waters from contamination. The 1996 SDWA Amendments require states to develop and implement Source Water Assessment Programs to analyze existing and potential threats to the quality of the public drinking water in the state. Because of EPA research, communities now have more information about the ways they can protect their source water from contamination including:

- By defining the land area contributing water to each public water system and identifying the major potential sources of contamination that could affect the drinking water supply
- By determining how susceptible the public water supply is to this potential contamination
- By ensuring source water security

How the EPA sees their role based on their interpretation of the law. EPA works with state and tribal agencies, non-governmental agencies and citizen groups to encourage partnerships and provide information for carrying out source water protection actions. The Agency identifies federal tools, including those available under the Clean Water Act, other EPA programs, and various agricultural programs, that can be used to help protect drinking water. EPA also works with national non-governmental organizations throughout the country, including the American Water Works Associations, the National Rural Water Association, the Ground Water Foundation and the Trust for Public Land.

State and local governments and water utilities play a critical role in protecting source water because protective actions must be tailored to unique local situations. A variety of programs fund source water protection activities at the local, state, and

federal levels. The states have now completed source water assessments for all public water systems and are developing strategies to help local communities use the information obtained from these assessments. States also can provide the resources to help fund local protection activities such as wellhead protection programs for ground water and watershed management programs for surface water. Localities can develop zoning requirements to ensure that businesses using hazardous materials are not located near water supplies and can protect land in the source water area from development through acquisition or conservation easements.

Businesses and individuals can also take actions to protect drinking water sources. Businesses can institute management practices to reduce their use of harmful contaminants or ensure their wastes do not discharge into ground or surface water. Individuals can reduce their use of pesticides and ensure that their septic systems are properly maintained. This is particularly important for those individuals who obtain their drinking water from private wells and must rely on ground water free of contamination.

EPA regulates public water systems; it does not have the authority to regulate private drinking water wells. Approximately 15 percent of Americans rely on their own private drinking water supplies, and these supplies are not subject to EPA standards, although some state and local governments do set rules to protect users of these wells. Unlike public drinking water systems serving many people, they do not have experts regularly checking the water's source and its quality before it is sent to the tap. These households must take special precautions to protect and maintain their drinking water supplies.

Protecting sources of drinking water before contamination can occur offers a common-sense approach to maintaining the quality of drinking water and safeguarding public health. Source water protection is an ongoing process that includes:

- Conducting assessments to understand the vulnerabilities of the source to contaminants
- Monitoring to detect contamination as early as possible
- Protecting and treating sources using Best Management Practices
- Planning for a quick response when contamination occurs

Local Drinking Water Information. Since passage of the Safe Drinking Water Act, our nation has enjoyed one of the safest and cleanest supplies of drinking water in the world. Protecting water at the source is the first critical step in a multiple-barrier approach that also includes treatment for contaminants, monitoring to ensure that health-based standards are met, and adequately maintain infrastructure, especially distribution pipes that carry water from the treatment plant to customers. An informed public, understanding that everybody plays a role in water protection, is critical to protecting our drinking water. EPA encourages all to learn more about actions they can take to protect drinking water.

EPA Drinking Water Strategy Goals and Accomplishments

1) **Goal:** Address contaminants as groups rather than one at a time so that enhancement of drinking water protection can be achieved cost-effectively.

Accomplishment: In February 2011, EPA identified carcinogenic volatile organic compounds as the first group that the Agency plans to address.

2) **Goal:** Foster development of new drinking water technologies to address health risks posed by a broad array of contaminants.

Accomplishment: In January 2011, promoted the formation of a Regional Water Technology Innovation Cluster to bring together public and private partners to focus on finding new ways to simultaneously treat multiple contaminants in drinking water.

3) **Goal:** Use the authority of multiple statutes to help protect drinking water.

Accomplishment: In April 2012, EPA released pesticide health benchmarks that can be used as tools in assessing the occurrence of contaminants in drinking water (when regulatory values or health advisories are not available).

4) **Goal:** Partner with states to develop shared access to all public water systems (PWS) monitoring data.

Accomplishment: In 2010, developed a Memorandum of Understanding between EPA and our State partners to facilitate sharing of drinking water monitoring data.

EPA Office of Water. The Office of Water (OW) is responsible for ensuring that drinking water is safe, and also for restoring and maintaining oceans, watersheds, and their aquatic ecosystems to protect human health, support economic and recreational activities, and provide healthy habitat for fish, plants, and wildlife. OW is responsible for implementing both the Clean Water Act and Safe Drinking Water Act as well as portions of the Coastal Zone Act Reauthorization Amendments of 1990, the Resource Conservation and Recovery Act, the Ocean Dumping Ban Act, the Marine Protection, Research and Sanctuaries Act, the Shore Protection Act, the Marine Plastics Pollution Research and Control Act, the London Dumping Convention, the International Convention for the Prevention of Pollution from Ships and several other statutes.

Headquartered in Washington, DC, the Office of Water works with the ten EPA regional offices, other federal agencies, state and local governments, American Indian tribes, the regulated community, organized professional and interest groups, land owners and managers, and the public-at-large. OW provides guidance, specifies scientific methods and data collection requirements, performs oversight, and facilitates communication among those involved. OW helps the states and American Indian tribes to build capacity, and water programs can be delegated to them for implementation.

What the EPA wants to accomplish in the near future. With the help of states, tribes and other partners, EPA expects to make significant progress toward protecting human health and improving water quality by 2015. Each of the major sub-objectives is supported by additional "strategic targets" that further define expected improvements in human health as well as watersheds and ecosystems by 2015. In addition, the goals includes specific expectations of progress to be made by 2015 in critical estuaries, the U.S.-Mexico Border area, the Gulf of Mexico, the Great Lakes, the Chesapeake Bay, the Long Island Sound, and the Puget Sound Basin.

EPA's Strategy. The 2011-2015 EPA Strategic Plan describes, in general terms, how EPA expects to accomplish each of the health and environmental goals over the next five years. Three key strategies will drive progress toward these clean and safe water goals:

• **Core Programs:** Continue effective implementation of core national water programs, giving priority to improving water quality monitoring and information management, as well as working with state partners to strengthen water quality standards, improve discharge permits, and reduce pollution from diffuse or "non-point" sources.

• **Water Infrastructure:** Help sustain and secure the network of pipes and treatment facilities that constitute the nation's water infrastructure through investments in State Revolving Loan funds, pursuit of innovative financing, local adoption of sustainable management practices, and an increased commitment to water efficiency as well as partnerships and technical assistance to enhance the abilities of utilities to plan for, prevent, detect, and respond to security threats.

• **Watershed Restoration and Protection:** Apply a watershed approach to restoring polluted waters across the country, including developing Total Maximum Daily Loads, implementing clean-up plans on a watershed basis, and promoting innovative, cost-effective practices like water quality trading and watershed permitting to restore and protect water quality.

EPA's Next Steps. At the end of 2012, the Office of Water issued the National Water Program Guidance Commitments (NWP) Appendix for FY 2013. In the spring and summer of FY 2012, EPA worked with states and tribes to assess progress and make needed program changes which were incorporated in NWP Commitments Appendix for FY 2013.

Notes:

- The EPA considers itself an enabler, providing tools and information to the public, and it is up to the public to utilize those tools.
- The federal government is intended to represent the interests of the people it governs. However, the issues that the government must deal with are many and complex. Many special interest groups maintain full time lobbyists to pressure congress and the president into favorable action on their interests. These lobbyists are often paid from the profits gained through exploiting these resources. These voices often overpower the voice of the citizens. As citizens, we must speak up to be heard.
- Federal Government web sites contain a great deal of guidance and background on the issues this country faces. These web sites are constantly being updated and improved. Please take advantage of these resources to become better informed.
- Article 3 of Protecting our Source Waters, in the next newsletter, will discuss the role of Maryland state and local government in protecting our source waters.

Who is Concerned with the Bay?

By Bill Klepczynski



The Chesapeake Bay has many users and supporters. There are many organizations in the Chesapeake Bay Watershed who are concerned with the preservation and restoration of the Bay. They are both governmental (GO) and non-governmental (NGO) organizations. The governmental entities fund activities and programs as well as promulgate regulations

concerning the use of the Bay. The academic institutions, whether state or private, are concerned with fostering research on the Bay. The NGOs are usually non-profit organizations and include members from a large portion of the Bay watershed. They also include many local groups of volunteers with a specific goal in mind and also Riverkeepers who are seeking improvements in their local waterways. CEPA would like to highlight these noteworthy organizations and their activities so that our readers know who is doing what, what is going on, and which organizations need assistance. This issue of the CEPA Newsletter will highlight the federal organizations concerned with the Bay Watershed.

Federal Agencies

Four federal agencies are directly concerned with Bay projects. They are:

- 1) **Environmental Protection Agency (EPA).** EPA has developed a Chesapeake Bay Compliance and Enforcement Strategy. The Strategy guides the use of EPA's compliance and enforcement tools to target sources of pollution impairing the Bay. It is a multi-year and multi-state strategy combining our water, air and waste enforcement authorities to address violations of federal environmental laws resulting in nutrient, sediment and other pollution in the Bay.
- 2) **Fish and Wildlife Service (FWS).** The Chesapeake Bay Coastal Program is the first of the Service's coastal programs established to conserve coastal resources. The Chesapeake Bay Coastal Program identifies important Chesapeake Bay problems and solutions, carries out on-the-ground conservation projects, encourages stewardship of resources by local governments and the public and works with other federal, state and local agencies and the private sector to implement solutions to problems within the region.
- 3) **National Oceanic and Atmospheric Administration (NOAA).** The NOAA Chesapeake Bay Office provides science, service, and stewardship to protect and restore the Bay. The Office is organized into three associated programs to ensure that NOAA's resources and capabilities are aligned with the current and future needs of the Bay, constituents, and partners. Efforts in these programs are focused on the work NOAA undertakes in the Bay area in four key topic areas (Fisheries, Habitats, Observations, and Education). Together, the Office's programs represent an integrated approach to ecosystem management, enabling scientists and resource managers to examine some of the interconnected elements of the Bay ecosystem and ensuring that Bay residents have a holistic understanding of the resource.
- 4) **Army Corps of Engineers (USACoE).** The U.S. Army Corps of Engineers environmental mission has two major focus areas: restoration and stewardship. The Corps supports and manages numerous environmental programs, that run the gamut from cleaning up areas on former military installations contaminated by hazardous waste or munitions to helping establish/reestablish wetlands to help endangered species survive. Some of these programs include Ecosystem Restoration, Environmental Stewardship, and Regulatory. The Regulatory Program is authorized to protect the Nation's aquatic resources. The Corps evaluates permit applications for essentially all construction activities that occur in the Nation's waters, including wetlands.

The Chesapeake Bay Program

The Chesapeake Bay Program is a unique regional partnership that has led and directed the restoration of the Chesapeake Bay since 1983. The Chesapeake Bay Program partners include the states of Maryland, Pennsylvania and Virginia; the District of Columbia; the Chesapeake Bay Commission which is a tri-state legislative body; the Environmental Protection Agency representing the federal government; and participating citizen advisory groups. The Chesapeake Bay Program brings together leaders and experts from a vast range of agencies and organizations. Each Bay Program partner uses its own resources to implement Bay restoration and protection activities. Partners work together through the Bay Program's goal teams, workgroups and committees to collaborate, share information and set goals.

HOW-TO HINTS

Composting

By Ron Tate



What is composting?

Composting is the natural process of decomposing plant remains and other once-living organic materials into a dark, crumbly, earthy-smelling material called compost that is excellent for enriching garden soil.

There are two basic types of composting, hot and cold. Cold composting takes place between 40 deg. F and 110 deg. F. Hot composting takes place, effectively, between 130 deg. F and 170 deg. F. Cold composting is performed primarily by microorganisms called mesophiles and is a slow process of decomposition. It takes about a year to complete cold composting. Hot composting is performed primarily by microorganisms called thermophiles and is a much more rapid process of decomposition. Hot composting can be completed in about 6 to 8 weeks.

The trick to composting is providing the right conditions to maintain a healthy population of microorganisms. The advantage of hot composting is that the heat can kill a wide range of seeds and insect larvae, thus reducing the threat to garden plantings when the compost is added to garden soil. The disadvantage is the need to pay more careful attention to maintain the right conditions for the thermophiles. The advantage of cool composting is that new material can be added on top of the old material in a continuous layering process, with the final compost product removed from the bottom of the pile. With hot composting, once the process is started, no new material can be added.

In addition to the microorganisms, bugs, worms and other macroorganisms are involved in breaking down the organic materials before and after the primary decomposition process takes place. The more finely the organic matter is chopped up to start with, the more quickly it can be broken down. In reality, all of these processes are usually taking place somewhere within a compost pile at one time or another.

Why compost?

By composting kitchen scraps, yard trimmings and paper products, you reduce the amount of material sent to landfills

and help reduce air pollution from garbage incinerators, as well as improve the health of your garden and reduce or eliminate the need for fertilizers.

Care and feeding of a compost pile.

The first consideration for a compost is size. There must be a sufficient volume to maintain a sustainable population of microorganisms and maintain the interior temperature. The minimum volume considered healthy is about 3 ft x 3 ft, x 3ft. It should not be much higher than 3-4 ft or the weight will choke off the air flow to the lower part of the pile. There are many different types and sizes of compost bins available commercially, or you can make your own using chicken wire, construction wire or snow fence.

Secondly, the microorganisms need oxygen to consume the organic matter. You must provide for the flow of air at least into the sides and top of the pile.

Thirdly, water is needed to allow for the transport of organisms, food and waste throughout the compost pile. The water content should be about 60%, which is the consistency of a wrung out sponge. Provided it drains well, which it should if it is getting adequate air flow, it is hard to get too much water initially, especially with a high leaf content. Once it is started, do not over-water, but maintain the moisture content.

Finally, the type and amount of organic material is important. Almost all organic material contains both nitrogen and carbon, but in widely varying ratios. The ideal ratio for composting is generally thought to be 30 parts carbon to 1 part nitrogen. Shredded paper is an ideal size for composting, however, paper and sawdust are nearly all carbon, a ratio of 700:1 so don't use too much of them. Coated paper and plastic will not break down. However, a small amount of these, mixed in the shredder, will do no harm and can help lighten the soil. Horse manure is about a 30:1 ratio. Below is a list of recommended materials.

Composting materials

Carbon source (browns)	Nitrogen source (greens)
Corn stalks and cobs	Alfalfa
Dry Leaves	Coffee grounds
Newsprint, copy paper (shredded)	Fruit and vegetable waste
Straw and hay	Grass clippings
Sawdust and wood chips	Fresh hay
Shrub trimmings	Manure: cow, horse, poultry, sheep, rabbit
Shredded phone books	seaweed
Wood ashes	Egg, peanut and nut shells
Stalks, stems and vines	Apple core and citrus rinds

Things not to compost.

Bones, cat manure, dog manure, cleaning solvents, cheese, cooking oil, dairy products, lard, mayonnaise, meat products, fish, plastic or synthetic fibers, diseased plants, weeds that have gone to seed, especially invasive weeds.

IN MEMORIAM
Charles R. Tucker

CEPA is saddened at the passing of one of its founding members, Charles R. (Sonny) Tucker. He was one of the original seven trustees in 1969 and served in various capacities until 2006. He died on September 8 of pulmonary fibrosis at the age of 85.

He was brought up in Birdsville, and served in the Army for four years until 1949. He worked for Verizon and retired after working there for 41 years. During that time, he also operated a farm in Birdsville. He is survived by his wife, Miriam (Bunny) and three children.

PROFILE OF A TRUSTEE
George D. (Jerry) Hill



Jerry Hill has been a member of the CEPA Board of Trustees since 1994.

Jerry was born in Washington and resided in Bethesda, Maryland through high school. He went to American University in Washington for a bachelor's degree in Business and then went on to the University of Maryland for a bachelor's in Mechanical Engineering. He later returned to College Park for a masters degree in Mechanical Engineering.

He has worked in ship design and navy ship survivability for most of his engineering career. He is currently employed by Alion Science and Technology in Alexandria, Virginia in the naval architecture and marine engineering division of the company (formerly John J. McMullen Associates, Inc.). He is responsible for a group that designs navy and commercial ship hull structures to meet operational and functional strength requirements. Earlier in his career he worked in test and diagnosis of ship structures, propulsion systems and machinery along with fellow CEPA trustee, Gary Antonides.

Jerry's affiliation with CEPA is a family affair. After moving to the area from Bethesda in 1971, his father, Jim Hill, an attorney, joined the CEPA Board of Trustees. Jerry's mother, Nancy, who worked with Jim at the Washington law practice, served as recording secretary for many years. They passed down a respect for nature and the environment and a belief that all should participate in the public policy process that affects us all.

Over the years Jerry has been active in a number of positions, including President. He currently serves as Chairman of the Planning Committee. This committee, on a bi-annual basis, reviews CEPA's mission and objectives and provides direction and guidance for CEPA's activities. He also is Chairman of the Forum Planning Committee which conducts the planning and preparations for the annual environmental forum.

Jerry is an active pilot and shares ownership of a single engine airplane based at Lee airport in Edgewater. He knows no better way to appreciate the Chesapeake Bay watershed than to fly over it in a small plane. Jerry and his wife, Ava, use the plane on vacations, both short and long. They have flown the

east coast from the St. Lawrence to Key West and annually use it for a summer vacation trip.

Jerry and Ava live on Lerch Creek in Galesville, where they keep a boat and a canoe for experiencing the beauties of the Bay from sea level as well as from above.



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