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

NEWSLETTER

Spring 2010

PRESIDENT'S MESSAGE

By Al Tucker, President, 2010

Everyone acknowledges that the state of the Bay and its watershed are, to put it bluntly, in bad shape. Some recent reports indicate that a few measures improved this year, but a single year should not engender hope, since a single good year does not constitute a trend. The main reason that the Bay is in bad shape is that we as a society have not recognized that we have been borrowing against it and will have to pay for it with real money at some time in the relatively near future. As I was writing this article, Bill McKibben's latest book, Eaarth[1] and an article in Scientific American entitled, Managing Earth's Future[2] were published. Just as the Chesapeake Bay has changed, it appears that the planet has changed and certain thresholds have been passed.

Carbon dioxide now exceeds 387 ppm in the atmosphere and most climatologists now say that exceeding 350 ppm is the point at which instabilities in climate will appear. The disappearance of the world's great forests, either by fragmentation or outright destruction, not only limits the oxygen produced but also destroys the great water pumps of moisture for inland climates. The population of the world has doubled in the past fifty years (note similar numbers for the Chesapeake Bay), the consumption of freshwater has tripled and that of fossil fuel use has quadrupled. At the same time we have cut photosynthesis by almost a half. If no new people were added now, the trend lines indicate that there would be no effect for five decades. The implications are dire and mean that we will have no choice but to deal with a changed environment.

The main problem is that the infrastructure we all enjoy is geared to the use of fossil fuel and the transport of nitrogen and phosphorus for growing food. There are those that believe that technology will come to the rescue. Perhaps, but only in a changed world. Some say nuclear or wind power is the answer, but that would require a new reactor every two weeks for the next forty years or 500 wind turbines per year during the same time period. The associated issue is that the old infrastructure is not adequate for accommodating the new. That means the source of money for the change can only come from one place, you and me. Hence, the primary question will be how will we pay for it. Will it be with increased taxes and fees or will we accept the need to limit growth or just continue to talk about it until it is far too late?

As Tom Horton outlined at the 2010 CEPA Forum, the problem is people, too many people, and too many people with large ecological "footprints" in the watershed. Basically people require energy, food, clean water and clean air, but when we think of growth, we don't see people as consumers of these local resources. In fact standard economic models do not take the environment into account; it is free to be used. And perhaps, this is where the problem truly lies. We, the citizens, cannot understand the true costs of using these vital resources

Growth is seen as a source of increased revenue. Growth, though, is people! Essentially, it is more people. The economic thinking, embraced by our leadership, requires more people to generate more tax revenue to pay for services. However, the recent discussion over impact fees in Anne Arundel County shows that our leaders think more people generate more revenue, even when builders are given a discount on the impact costs. There is no justification for this belief; in fact, the record indicates otherwise.

Currently Anne Arundel has unfunded liabilities for road and stormwater requirements that run in the several hundreds of millions of dollars. At some time these costs will come due. If climate change means more precipitation in Maryland, then will fixing the old infrastructure be adequate to accommodate the projected increases? If the population tends to grow, the unfunded impact on environmental resources grows out of proportion. For example, each automobile generates four times the amount of impervious surface that it occupies; each person generates more impervious surface for housing, work and play; from 1990 to 2000 the population in the watershed grew by 8% but the associated impervious surface grew by an astonishing 41%. The environmental impact of impervious surfaces is well known. Yet, when each new citizen consumes a larger share than previous generations, it becomes clear that the use of these resources is not sustainable. →

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The implementation of TMDLs (Total Maximum Daily Loads) for nutrients, sediment and bacteria for streams and rivers will put the current philosophy of growth on a collision course
The implementation of TMDLs (Total Maximum Daily Loads) for nutrients, sediment and bacteria for streams and rivers with environmental requirements (needs). Current regulations at the federal and state level target those violators that can be identified as point sources, but non-point polluters, who are fundamentally homeowners, contribute similar amounts of pollution. As the population of municipalities grows, the maximum daily load limit will require technology to clean effluent to a finer and finer degree. In fact, some TMDL requirements may already be beyond the reach of some strapped budgets in some cities and towns. As a result, it seems that, if it comes to a choice of increasing taxes or preserving the environment, our leadership will continue to defer the costs and borrow against the environment, leaving it to a future generation to solve.

[It must be pointed out, albeit parenthetically, that Calvert County seems prescient by comparison. Over thirty years ago county leadership decided to do something unheard of among Maryland counties; they consciously limited the growth to a maximum number of households. At the time, it was not done for environmental reasons but for a purely fiscal restraint reasons, but the end result has impacted their environment far less than others while saving the citizens money to boot.]

The Chesapeake Bay watershed represents a microcosm of the planet's temperate zones. What we can do here would make a small contribution to the whole, but it could be a demonstration for the rest of the planet. We could force the counties in Southern Maryland to enforce the limits of forest clearing, strictly limit the transport of nutrients in the environment (maybe lawns are not required), make sure that greenways remain intact, and limit the use of our most precious resource groundwater.

Most important of all, is changing the minds and attitudes of our local leaders. They continue to think that the state and federal coffers will take care of them. That's a mistake. We have to convince them that they are the ones exacerbating the environmental problems. If we can't change their minds, then we will have to replace them with people who do understand that a changed environment is inevitable and that effort and money will be required to stabilize it and prevent it from worsening.

References:
1..McKibben, Bill, "Eaarth," Times Books, New York, 2010.
2..Foley, Jonathan, "Boundaries for a Healthy Planet," Scientific American, Apr 2010, pp. 54-57.

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CEPA FORUM
The Health of the Bay and You
By Lloyd Lewis

CEPA Public Forum, "The Health of the Bay and You" was held on February 26th at Southern High School. It was organized and chaired by Rich Romer, a CEPA Trustee, and it featured short presentations by Chuck Fox of the EPA Chesapeake Bay Office, and Tom Horton, noted environmentalist and author. Horton's monograph, "Growing! Growing! Gone!" was distributed to attendees. Each presentation was followed by an extensive question/answer period (Q/A). Sometimes those in the audience made statements (S) of their own.

Rich Romer

The highlights of Chuck Fox's presentation included the fact that the Clean Air Act was relatively successful, resulting in a 50% reduction in air pollutants despite a dramatic increase in population, miles driven, GDP, energy use, etc. He noted that the environmental regulations were mandatory, and the cost to society of the regulations is estimated to be $40 billion/yr, but that the benefits may be 5 times that amount. Things are not so rosy with the Clean Water Act, where many of the strategies rely on voluntary participation. About 50% of water borne pollutants come from agricultural sources in the Bay region. Current Federal plans include (1) expanding regulations for large animal operations, (2) regulating stormwater from municipal areas, and (3) federal oversight of State enforced TMDLs, and (4) the possibility of taking over control from states of the Clean Water Act if the states do not adequately enforce the provisions.

Chuck Fox

Many of the questions and answers (and statements) after Fox's session were as follows:

Q: What can we as individuals do to support a cleaner Bay?
A: Influence elected officials, especially in State capitals.

S: We should attempt community-based solutions (i.e. green jobs) and emphasize retrofiting existing malls for stormwater solutions.

Q: Will the use of green roofs be a part of stormwater management?
A: Yes, the goal is to hold 95% of precipitation on site (in up to a 1.7" rain event).

Q: What can EPA do to preserve undeveloped areas?
A; Little, unless it is Federal land.

Q: Is pollution from chicken waste federally regulated?
A: Yes, most operations are covered. Just in the last year some 450 large operations were included. The emphasis to date has been on the application of the manure.

Q: Is most of the nitrogen pollution from agricultural applications?
A: Yes, although cost is a factor controlling excess use. We also know that phosphates can build up with repeated nitrate applications.

Q: Do we have to wait for some kind of crisis (i.e. human deaths) to get action?
A: Apparently yes in some cases.

Q: Can we use something other than regulations (more positive approach)?
A: Yes, e.g. economic stimulus funds, such as for stormwater retrofits.

Q: Regarding the Clean Water Act, all AA County rivers and streams are designated "impaired." Can we take legal action?
A: Yes, if local waters violate the State (and Federal) water quality standards (e.g. nutrients or bacteria). Then TMDLs assigned to sources and point sources are enforceable now.

Q: What can be done about the many variances granted by local planning and zoning officials?
A: In Maryland, appeal to the State MDE (or Critical Area Commission) for enforcement.

Q: Is it true that EPA has not been given authority to regulate non-point source pollution?
A: Not exactly, EPA can use its State oversight role.

S: In Maryland, farmers file nutrient management plans that collectively add up to TMDL exceedances. Maryland seems to be lax about nutrient management plan enforcement.
A: Citizens may have to force Maryland to be more aggressive in enforcing TMDLs.

S: Local candidates who supported a stormwater fee lost in past elections. The federal government should help support public access to the Bay.

Q: Will you be able to recognize "success" (in Bay cleanup)?
A: Yes, there will be lots of obvious indicators.

Tom Horton

Tom Horton, in his presentation, noted that there are two approaches to growth control; control the population or the impacts thereof. For our "per capita" behavior, there are far too many "capitas". The Bay watershed population is about 16 million and growing at 2 million per decade. It seems any environmental gains are offset by population increases. Economic growth is part of our culture; a huge part of the GDP is related to building. We need to lobby for a steady state economy; i.e. prosperous but not growing. We need to establish values for our natural areas, and account for them in our development plans. The idea of a mandatory 2-3% increase in the GDP per year is a relatively recent (since 1970s) phenomenon. At that rate we double the size of our economy each 25 years. Another issue is that 45-60% of our habitat is automobile driven.

Again, the question and answer session was quite lengthy and illuminating:

Q: What can we as individuals do (to support a cleaner Bay).
A: Stay current with publications, convince your neighbors of the importance of action, put value on natural features (i.e. submerged aquatic vegetation, livable dissolved oxygen, etc.), pursue smart growth.

Q: How can we address the desperate world conditions brought on by population growth?
A: Promote family planning and raise educational levels.

S: When we value a natural resource, industry "mines" it.
A: We need to place values on the ecological benefits of our natural resources.

Q: What keeps the economy going in a "steady state" model?
A: Rebuilding and remodeling rather than new building; conservation rather than even "green" energy development.

Q: How do we promote happiness?
A: More money is clearly not the answer; we need better health care, retirements, etc.

Q: Are there countries where the "steady state" model works?
A: Yes, Sweden and other Scandinavian countries.

Q: Do we currently subsidize farmers who we want to stop polluting?
A: Yes, and we should be subsidizing "green" activity.

Q: Hasn't Calvert County looked critically at growth?
A: Yes, they actually down zoned twice in the last 3 years on economic and quality of life grounds. They used transferable development rights to resolve equity issues.

Q: If we fail to reduce our population, will the "Bay cleanup" fail?
A: Likely, nationally we are going to hit 1/2 billion by 2070 and 1 billion by 2100, 82% from immigration.

WEST/RHODE RIVERKEEPER'S REPORT

By Chris Trumbauer
www.westrhoderiverkeeper.org).

Grades Matter

Temperatures are warming up, tulips are blooming, and allergy sufferers are sneezing up a storm. These days, there is also another sure sign that spring is here: the release of Report Cards grading the health of our waterways.

Each year, various groups including Riverkeepers,

watershed groups, the University of Maryland, and the Chesapeake Bay Program release Report Cards designed to assign grades or scores to the Bay or particular tributaries. The underlying reasoning for each of these efforts is simple. We need to measure our progress.

The effort to restore Chesapeake Bay is vast and complex. New policies and regulations are enacted each year. Meanwhile more and more people are moving to the area and land continues to be developed. Stormwater is the major driver of water quality in many rivers, while agriculture runoff is the primary concern in others. A few rivers are showing signs of improvement, while many more are either stagnant or becoming worse.

Report Cards are a valuable tool for quantifying monitoring data and measuring current water quality conditions. In addition, many watershed organizations have found that report cards are important outreach tools for generating community interest and increasing citizen understanding of ecosystem health. Water quality data by itself is frankly not very sexy, but packaged in a Report Card format, the information can be communicated effectively.

Many watershed groups are now part of the Mid-Atlantic Tributary Report Card Workgroup, led by scientists from the University of Maryland Center for Environmental Science. This group works to standardize methodology used to assess water quality and lends assistance to watershed groups producing Report Cards. This helps ensure the various Report Cards are credible, comparable and relevant.

Since I am a Riverkeeper, people often approach me and ask me how the rivers are doing. This question isn't idle conversation—they really want to know. Report Cards help us to give a credible answer to those questions.

It's important to remember that many things affect water quality and there is variability in the data from year to year. However, grading water quality indicators annually is valuable, especially when compared to long range data trends. For instance, water clarity in the West and Rhode Rivers was slightly worse in 2009 than 2008. Even more significant is the fact that the water clarity in these rivers seems to have slowly but steadily gotten worse since the Chesapeake Bay Program started tracking it in 1985.

Unfortunately, low grades are very common in most of the water quality Report Cards for the Chesapeake Bay and its tributaries. In fact, bad news for the Bay is so constant that we risk becoming immune to it. We cannot let our enthusiasm for clean water be dampened by bad news. The dead zones, algae blooms, and bad grades should be a wake-up call that our current policies and regulations are not sufficient to bring the positive change we all want to see.

However, not all the news is bad. In the West and Rhode Rivers Report Card, we profile a study being conducted by scientists at the Smithsonian Environmental Research Center which is investigating mercury in our waterways. New regulations on power plant emissions are reducing the amount of mercury going into the air. Researchers are hopeful that this will bring about a quick response in terms of lower mercury levels in our waterways and the fish that live in them. If so, perhaps this model of regulation also could be used as a model to help address nutrient pollution in our waterways.

We know that nutrient pollution is the chief contributor to the Bay's poor water quality. Yet developers fight new stormwater regulations, new ideas on oyster management are met with fierce opposition, and enforcement of environmental regulations continues to be weak. If we are serious about improving our grades, it is time to make tough decisions. That includes holding elected officials and other decision-makers accountable for their actions.

While the actual grades are given to indicators of water quality, what we are really grading is our effort to restore the Bay. Indicators like dissolved oxygen levels show symptoms of an ecosystem out of balance. The causes of those symptoms are what we really need to address: land use, pollution sources, fisheries management, etc. We all need to work harder to tackle these issues if we want to improve our grades.

Chris Trumbauer is the West/Rhode Riverkeeper. He released the West and Rhode Rivers Report Card on Saturday, April 10 in Galesville.
See www.westrhoderiverkeeper.org for more details.

REGULATING GRAYWATER

By Gary Antonides

In CEPA's last newsletter, we discussed what graywater is and how it can be used for landscaping irrigation and possibly other uses. How it is regulated (or not) is the issue addressed here.

It is now recognized and accepted by an increasing number of regulators that the microbiological risks of proper greywater reuse at the single dwelling level are insignificant and it need not involve complex, expensive and onerous approval processes. It has been estimated that there are already eight million greywater systems in the US with 22 million users. In 60 years there has not been one documented case of greywater transmitted illness. But regulating its use requires some new thinking.

In the past, water management has traditionally involved the manipulation of water supplies with dams and water conveyance structures, as well as the location and development of new supplies. Conservation techniques have also contributed. Reference 1 says that between 1980 and 1995, the U.S. population grew 16%, but water withdrawal dropped nearly 10%, due largely to increased water demand management.

But the dwindling of water supplies requires more action. Groundwater supplies must be replenished to be sustainable. Depleting surface water supplies can damage habitats for aquatic life, and the over pumping of groundwater resources can lead to land subsidence, such as in Houston, Texas and the San Joaquin Valley in California. Shortages in water supplies can result in building moratoriums, such as was imposed in Frederick, Maryland not long ago, and water use restrictions. It is possible to install a safe, simple greywater

system for landscape irrigation if a few basic principles, as discussed below, are followed. For a more elaborate system or one used in new construction, it is recommended that an experienced contractor or consultant be used. They will be familiar with the International Plumbing Code (IPC) and any state regulations. Unfortunately for Marylanders, the Code of Maryland Regulations (COMAR) 26.04.02.05(A), which applies to septic tanks, says "Sewage from bathrooms, kitchens, laundry fixtures, and other household plumbing shall receive adequate treatment from a sewage treatment unit ---", so a residential greywater system would not be strictly legal. There are indications that the changing regulatory environment regarding greywater in the U.S. will be felt in Maryland. During this year's legislative session, Delegate Virginia Clagett introduced a bill to allow simple systems, which was considered by the House Environmental Matters Committee. During a hearing on the bill, MDE opposed it, and for this session, the bill was withdrawn. My impression of the hearing was that MDE didn't appreciate the limited scope of what was proposed, and that it wasn't clear to those present how already existing regulations affect greywater. Hopefully, these issues will be ironed out and a greywater bill will be introduced again next year.

According to Reference 2, the 2006 IPC includes provisions to use greywater for flushing toilets as well as for subsurface landscape irrigation. The Uniform Plumbing Code (UPC) only allows gray water to be used in residential subsurface landscape irrigation. (Neither the IPC nor the UPC directly addresses using captured *rainwater* for flushing toilets, another simple and effective conservation measure.)

Key requirements of a residential graywater plumbing system allowed by the IPC are that the gray water must be disinfected with disinfectants such as chlorine, iodine, or ozone, must be dyed blue or green to differentiate it from potable water, and may not be stored for longer than 72 hours. Greywater entering a reservoir must pass through an approved filter.

Oasis Design

Reference 3 is a comprehensive website on greywater systems created by Art Ludwig, who is the founder and principal of Oasis Design. He has worked with several states in drafting greywater laws, and has a wealth of information on the technical aspects of using greywater, as well as the political aspects, including comments on the laws of the several states (not Maryland) that presently have laws to regulate rather than prohibit the use of greywater.

Anyone planning to install even a simple greywater system would do well by referring to this website. Some of the points he makes regarding greywater are given below for emphasis:

Advantages:

- **More effective purification**—Greywater is purified to a spectacularly high degree in the upper, most biologically active region of the soil. This protects the quality of natural surface and groundwaters. Topsoil is a purification engine many times more powerful than engineered treatment plants, or even septic systems, which discharge wastewater deeper into the subsoil. *In topsoil, beneficial bacteria break down pollutants into water-soluble plant food, and the plants eat it, leaving pure water.*
- **Groundwater recharge**—Greywater application in excess of plant needs recharges the natural store of water in the ground rather than having it end up in rivers and lakes.

Health Considerations:

- **Principles---**In practice, the health risk of greywater use has proven minimal. Nonetheless, greywater may contain infectious organisms. All greywater safety guidelines stem from two principles: (1) Greywater must pass slowly through healthy topsoil for natural purification to occur, and (2) Design your greywater system so no greywater-to-human contact occurs before purification.
- **Direct contact or consumption**—Carefully avoid cross connections between freshwater and greywater plumbing. Label greywater plumbing. Wash your hands after contact with greywater.
- **Microorganisms on plants**—Direct application to foliage can leave untreated microorganisms on surfaces. Don't use greywater to water lawns (except with sub-surface application), or fruits and vegetables that are eaten raw. Greywatering fruit trees is acceptable if the greywater is applied under mulch.
- **Storage**--- When warm nutrient-rich greywater is stored, it incubates bacteria. Greywater storage should be limited to 24 hours, according to most experts. This might entail an automatic dump valve to periodically empty the storage tank before refilling with fresh water. An alternative is to use chemical disinfectants such as chlorine or bromine.
- **Breathing of microorganisms**—Droplets from sprinklers can evaporate to leave harmful microorganisms suspended in the air, where people may breathe them. Don't recycle greywater with sprinklers.
- **Chemical contamination**—Biological purification does not usually remove industrial toxins. Toxins will either be absorbed by plants or pollute groundwater. Don't use household cleaners that are unsuitable for introduction into groundwater.
- **Contamination of surface water**—Greywater needs to percolate through the soil, or else it might flow untreated into creeks or other waterways. Discharge greywater underground or into a mulch-filled basin to contain it and slow its movement toward surface waters or groundwater. Don't apply greywater to saturated soils.

References:

1..http://www.csa.com/discoveryguides/water/overview.php
2..http://resourcecenter.pnl.gov/cocoon/morf/ResourceCenter/article/1638.
3..http://oasisdesign.net/greywater/

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