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Tidings

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IT'S A SMALL WORLD AFTER ALL

It seems like this Disney song was right. As I look back 40 or 50 years, I can remember how policy makers never considered that all the pollution we were dumping into the environment - either in the air or in the water, would have much of a global impact. All pollution seemed local. And in the years when just Europe, Japan and the U.S. were industrializing, the impacts of our pollution were being absorbed by the rest of the world and were not so noticeable. But now, the rest of the world is either industrialized, or wants to be industrialized, and the global effects of pollution are noticeable. It is a much smaller world than we ever considered. And it is crowded. The recent climate change conference in Paris encompassed over 200 countries, and underscored the difficulties the world is going to have in trying to control pollution, just air pollution. Their pollution effects us; our pollution effects them. It is going to take some major shifts in energy policies to have any impact. I can only hope that some of the policies work.

While there are still industries out there which deny that pollution is causing the climate to change or even that the climate is changing, we can measure the increasing levels of carbon dioxide in the air. According to the science, carbon dioxide is trapping heat in the atmosphere and is causing the earth to heat up. There are other gases such as methane which are also potent heat trapping gases. But the policy makers are focusing on carbon dioxide in the air. Increasing carbon dioxide is affecting the oceans as well. The oceans are absorbing carbon dioxide and becoming acidified. This will impact all animals and plants which make calcium carbonate skeletons and shells, like coral. In some ways, the oceans act as a sink for this carbon dioxide. The increasing carbon dioxide in the air, the increasing average air temperatures, the melting of the glaciers, the increasing sea levels and the acidification of the oceans are measurable events. The effects of these measurable changes on the earth's climate is often debated. Will tropical storms be more severe and move into higher latitudes? Will areas become drier or wetter?

Solutions to control carbon dioxide emissions are going to be difficult. As I write this newsletter, the U.S. budget for 2016 is being debated in Congress. The Obama administration is proposing new emission standards for power plants and giving permanent extensions of tax breaks for solar and alternative energy. These proposals are being tacked onto the budget. Republicans are opposing these new emission standards. Instead of using regulatory mechanisms for controlling carbon dioxide emissions, economic incentives may be better. I have seen several articles calling for a tax on carbon emissions, or capping carbon emissions and allowing industries to trade (sell) carbon emissions. This idea has been batted around for several years now. A more indirect method is giving economic incentives to less polluting companies. I recently saw an article in Yahoo Finance about New York's comptroller shifting stock holdings in the state retirement fund to companies with lower carbon emissions.

One of the big problems in the U.S. is people do not necessarily see climate change as a problem. People in the North are "enjoying" their warm winter so far, and their heating bills are a lot less. Around here, azaleas blooming in December is a little strange, but so what. Things happen but we can't really say if it was warm weather or something else. Fires in the West, hurricanes in Florida or New York may or may not be caused by climate change. So, in the U.S., there has not been an outcry for limiting carbon emissions. This is the problem. Personally, I think we should all consume less, eat less, and as a waterfront owner, get ready for that storm, high tide and saltier water.

Local power plants could do a lot better in limiting their emissions of carbon dioxide. Gulf Power's Crist plant is still using coal as its main source of fuel. Recently Gulf Power announced plans to partner with the Department of Defense and install solar panels at Eglin AFB (30 megawatts), Holley Field (40 megawatts) and Saufley Field (50 megawatts). The power generated at these solar facilities will be sufficient to provide energy for 18,000 homes for a year. However these solar panels will not replace the power from coal at the Crist Plant. International Paper is also using a coal/wood mixture to generate power at their paper mill in Cantonment, FL. This is having a big impact on us on Perdido Bay as the ash from their power boilers are washed into the treatment ponds and into the bay. Besides generating carbon dioxide, coal/ wood ash has heavy metals, dioxin and PCB's. It is interesting to note that the former owners of the mill, St. Regis, used natural gas which is a much cleaner burning fuel.

SCIENCE WITH AN AGENDA

The agenda was getting the environmental agencies to pass a new environmental rule which limited the amount of nitrogen and phosphorus which was allowed to be discharged to waterways. The scientists involved was Dr. Robert Livingston from Florida State. The object was to show how "too many nutrients" harms bodies of water. Perdido Bay was one body of water used in demonstration.

The story goes like this. After the citizens on Perdido Bay challenged the Champion permit in 1986, Champion claimed that they needed time to study the problem and find out what could be done. I certainly thought that Champion would have known what the problem was. It was well known among environment scientists that paper mills emitted lots of organic solids (paper fibers, bacteria from treatment ponds, etc) which take a long time to degrade. These sludges use up oxygen as they degrade. The sludges which paper mills discharged into the Great Lakes were legend. For years the people of Vermont fought the International Paper Company's mill in Ticonderoga, N.Y. over sludges discharged to Lake Champlain. But we decided Champion needed time to figure out what to do. Several of us agreed to allow Champion time to study the problem and explore solutions to the problems they were causing. Dr. Livingston from Florida State University was the consultant Champion hired.

The first of many Livingston studies came out in 1992. I could see then, that the study was not going to be honest. In his first report, problems caused by the oxygen - consuming sludges were completely ignored. Livingston said nutrients were causing the problems. These nutrients, nitrogen and phosphorus, cause plants to grow. Paper mill effluents are known to be poor in nitrogen and phosphorus. These nutrients have to be added to the effluent in order to treat the high levels of organic matter. So, if nitrogen and phosphorus were the problem, then the paper mill would just stop adding so much of these nutrients (and probably not get as much treatment). There was also nitrogen and phosphorus coming down the Perdido River; the level was low however. These nutrients did cause massive blooms of drift algae at our beaches through the 1990's.

In 1995, Champion converted the bleaching operation at the mill in Cantonment to a new bleaching agent- one which didn't cause formation of the dangerous dioxin. Right away, I could tell that the new bleaching agent, chlorine dioxide, was herbicidal. I was doing research in the bay, at the time, and after 1995, I could not get small algae to grow on glass plates in the bay. There was still lots of drift algae and grassbeds at our beach. But the fronds of grassbeds growing at our beach had a red color instead of green. When examined under a microscope, the chloroplasts of the fronds were deformed. Something was definitely wrong. The environmental agencies were contacted. Nothing was done.

In 1995, Dr. Livingston claimed that he began to see blooms of a toxic algae, *Heterosigma*, in Perdido Bay caused by too many nutrients. Livingston claimed that this toxic algae was killing life in the bay. Blooms of toxic algae normally cause fish kills and have other visible signs, such as causing throat irritation, etc. We saw none of that on Perdido Bay. Life in Perdido Bay continued to decline. Livingston documented this decline. Livingston continued to claim that toxic algae blooms were causing this decline even though nutrients had declined in the bay. In 2007, Livingston submitted his last report on life in Perdido Bay. In the last three years of his study (2004-2007), he had found that life in the bay had fallen to the lowest level since the beginning of his studies in 1986. Things have not changed in the bay since 2007.

In 2000, Dr. Livingston published a book, *Eutrophication Processes in Coastal Systems*. It documented how over fertilization of our waterways was killing our bays and

waterways. Most of the data in the book came from his studies on Perdido Bay. It was published by the CRC Press. His book and several other sensational (and false) claims were used to push the EPA and states into developing a specific nutrient rule.

In the early 2000's, the EPA began looking at replacing a very general (and unenforceable) rule for nutrients with specific limits for nitrogen and phosphorus. Florida was also following the EPA's rule-making with their own specific limits on nitrogen and phosphorus. In 2008, the Sierra Club sued EPA to get the process moving. Finally in 2012, nutrient limits were set for the various waterways in Florida. But, in a rather unusual move, each waterbody had its own specific limit set. So every bay and estuary in Florida has its own limit for nitrogen and phosphorus. Dr. Livingston was leading the way for specific limits for each waterbody. These limits are based on past data from the waterbody. Guess which bay has the highest nitrogen and phosphorus limits in the state of Florida. If you guessed Perdido Bay - Upper Perdido Bay, you would be right. These limits were based on Dr. Livingston's data from the years before he claimed blooms of toxic algae were killing Perdido Bay (1987- 1994).

This exercise in falsifying data and hiding the real problem was undertaken at the highest government levels. EPA was totally aware of the problem. The Livingston study was undertaken to: 1) hide the effect of the papermill's new bleaching chemicals on life in Perdido Bay, and 2) push for a "nutrient rule". I am certain it was done with collusion between chemical companies, government, and the paper company. I don't believe that Livingston made up the toxic algae. I think that the algae was in the bay. How it got there is another question. Perhaps, it was seeded in the bay. I don't believe it bloomed naturally.

Currently, a red-tide is "blooming" in the Gulf of Mexico, off our beaches. Too many nutrients are still a problem. However, the media no longer covers the dangers of over nutrification. The new environmental disaster is global warming.

HAVE A VERY MERRY HOLIDAY. WE WILL SEE YOU IN 2016.

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