

## **RESOURCE CONSERVATION AND RECOVERY - ACTION AGAINST OVER-CONSUMERISM, POLLUTION AND POVERTY**

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I am grateful for this opportunity to be here in Greece to talk to you tonight about such an exciting and worthwhile challenge. Two years ago when I had the opportunity to speak at the Rio Summit, little did I realize that it would result in this invitation to come to the center of civilization.

Who is N-Viro International? Why is it here? It is a company that for the last twenty-five years has believed that humanity should not be throwing away its natural resources. It believes that there are great markets for these materials, and that people should be putting into practice policies, regulations, legislation, to save this planet Earth for our children.

The company really began in 1966 when it started searching for ways to compete against asphalt, and originated from the cement and concrete industry. The asphalt petroleum industry itself must be saluted for the immense job it has done in developing multiple products from crude oil. Resins, polymers and asphalt, have all come out of its research. The environment industry can do, and must do, the same. N-Viro-Energy began in 1979 and just recently went public in the United States. Its product is called Bio-Blend, and consists of municipal sewage sludge that has been converted into a bio-organic fertilizer and top-soil product.

Mankind can indeed be stupid. In a book called "Crisis Years: Kennedy and Khrushchev 1960 to 1963", by Michael Beschloss, two great men of peace, Nikita Krushchev and John Kennedy, are shown almost succeeding in taking this world to thermo-nuclear war. Consider what man is doing to himself throughout the world, now. He is still destroying the rain forests at eleven million acres a year; polluting the rivers and lakes; still polluting the air, ignoring the global warming and depleting the ozone layer.

In Chinese the word "crisis" has two figures: one is the figure of danger and the other is of opportunity. N-Viro sees this as being the answer to where it is going in the future, what its vision is. A great danger has to be faced, but the opportunities to take us forward and provide a world for our children are literally unbelievable; and the idealism of people like Dr. Vlavianos-Arvanitis is the light that will make that dream possible.

When is this generation, now, going to stop passing the buck on budgets, trade deficits; and, most importantly, on education deficit? When is it going to realize that it has an obligation to educate its children so that they understand what the dangers are, and what the opportunities are, for this world?

This generation has the responsibility, and it must have the accountability, to deliver this planet Earth to them, as well a planet as when we received it. It must have the courage to challenge the status quo. As a member of the World Health Organization, of the American Association branch, I am informed that many children die yearly, most of them through hunger. It is unacceptable to allow lands to become deserts again, to have become so dependent upon chemicals. America, with such a large population, must have several billions of acres of fertile land, yet agronomists say that less than 20% of its current agricultural land is capable of sustainable agricultural development. This can be changed. The Countryside Magazine, published by the Hertz Corporation has as its motto that "we don't inherit our land from our parents, we borrow it from our children."

This presentation is to talk about a war. The word war is unpleasant, but it is appropriate. The total commitment that is associated with war; on waste, on environmental pollution, and most importantly on hunger, must be made. These problems can be dealt with by synergetically doing one to accomplish the other.

In the United States, over 3 billion tons of organic industrial waste, and over a billion tons of agricultural waste are thrown away annually. This is the type of problem that has to be dealt with on a worldwide basis and its disposal can serve as an illustration of the problem of land application. Not only does it pollute lakes, streams and ground water, but more importantly it deprives farmers of a vital feed stock for organic fertilizers.

Can these wastes be used? Can environmental technology be used while still being competitive with standard technology, standard practices, the status quo? The answer is an unqualified "yes" as far as today's economics go. For example, the Prince of Wales recently made the following statement in London. "Incineration, it seems to me, violates the most profound ecological principle of all which is 'to close the loop',

minimizing resource use and energy waste at every stage of the economic process". Yet just recently the city of London accepted a proposal to build two incinerators to destroy all London's sewage sludge. This can be construed as bordering on the criminal. First of all, industry in London is spending great quantities of money to pre-treat their sewage so that metals and other toxic materials do not get delivered to the treatment plant. They are spending a great deal of money to make the waste usable. Yet London will spend between 150 US dollars and 200 US dollars a ton in incineration annually, to destroy this tremendous natural resource. For significantly less money, that resource can be converted into a bio-organic fertilizer or fertility product and shipped to countries like Bangladesh, Mexico, and Pakistan. These countries desperately need bio-organic top soil material to provide fertility for their children, now and in their future. How can incinerating such a great resource be justified? But it is easier to build the incinerator, it is easier simply to do the engineering on that, than to seek a better bio-environmental solution. That is unacceptable.

With regard to organic waste, the United States is facing a new Clean Water Act. This act is going to trigger off three key questions, already being asked throughout the world. What is the impact of non-point discharge on lakes and streams and ground water, of agricultural run-off and of soil erosion? Again, each of these wastes has an impact on environmental situations. Yet there are tremendous markets for them. In particular there is the agricultural opportunity, where almost 85%, and this is strictly markets available in the United States - a half billion organic fertilizer market, is available in the United States annually. And only a fraction is now being utilized.

The opportunity is unbelievable. Sustainable agricultural development is what must be looked at to feed our children and our children's children. Long term fertility must be considered. The present and the future, the cost, and the environment, must be looked at. The farming community is investigating this, and so must industry.

Can bio-environmental technology and organic farming be competitive? To quote just a few words from the National Research Council of the United States: "Well-managed, alternative farming systems will nearly always use fewer synthetic chemical pesticides, fertilizers and antibiotics per unit of production, than comparable conventional terms. Reduced use of these inputs lowers production cost, and lessens agriculture's pollution for adverse environmental and health effects, without necessarily decreasing (while in some cases, increasing), per-acre crop yields, and their productivity of live stock and managed - systems." In other words, the answer is "yes". The bio-environmental technology just has to be employed to ensure that this takes place.

The late Robert Kennedy, in his campaign of 1968, quoted George Bernard Shaw : "Some people see things as they are, and ask why? I dream of things that have never been, and ask, why not?" Let us dream of a new world, where the environmentalists and the agriculturists work hand in glove, where they work together to build a fertility system that is low in cost, and high enough in production, so that the world not only receives a bountiful food production, but receives it at a cost that it can afford. Let us believe in a new world, where the environmental enthusiasts, work hand in glove with the environmental capitalists, the people who want to work together to create a new world of environmental technology.

Does it make any sense? Is it something "do-able"? On the other hand, does it make any sense to dump the clean organic materials in land-fills, in the ocean, or in an incinerator, at higher cost, when the world is hungry and soils are going to rot, turning back into desert? The soil needs those bio-organic features. This illustrates that the economics are with bio-environmental technology, not against it.

This is N-Viro's worldwide mission, as a company. Again, the thrust for people in this world, must be to find these bio-organic waste materials, and convert them into usable materials. The objective, as a company, is within the next 10 years to be the largest source of bio-organic fertilizer and top soil in the world. To give an overview of what the markets are, and what is happening in the United States as far as sewage sludge production and management is concerned: in 1991, only 25% of sewer sludge was utilized. By 1996, that figure will be approaching 50%. So the need to stop land-filling, to stop incineration is beginning to be recognized. The trend-lines are in the right direction.

The Environmental Protection Agency, EPA, recently published a new 503 regulation. They must be applauded, because for the first time they had the political courage to say that a waste need not always be a waste. If waste is treated to the point where it is safe from the stand point of pathogens, heavy metals, stability, then it can become a product, and should be treated as a product, with no further regulations. That product would be exceptional-quality sludge.

It is the first time that the EPA have really taken a strong stand. It was not easy, because there are many people who have no interest whatsoever in seeing waste converted into products. Those involved in the disposal business do not want to see utilization, but the continuation of disposal. Workers in the design-engineering business would much prefer to see the construction of incinerators, or destructive digesters, than see these wastes converted into products. So there are many political people who do not want to see any change in the status quo. It is the job of people interested in the environment to make sure that the change in the status quo happens, when it is ripe.

Recycling is not a panacea; this must be understood. The environmental community must recognize that pollution-prevention is the objective. But it must be safe pollution-prevention, community-acceptable pollution-prevention. Many people talk about recycling sludge and putting it on farmland; who would want to put even digested sludge on a neighbor's property? Who would like a neighbor to put it on his property? Who wants sludge running into trenches and ground water? In other words, there are factors in recycling that are good, and there are factors that are not so good. Recycling must meet public health standards, without causing any concern; it must meet community-acceptability, and

social-responsibility standards.

It must have real markets, where customers want the product, not just areas for off-loading somewhere. It needs also to be able to withstand really strong monitoring and enforcement and stand up to environmental issues. It must not be recycling at the expense of ground water, or service water, through urine applications, and the problems of run-off.

Sludge is what it takes to create N-Viro's product. N-Viro's technologies take sewage sludge, add alkaline admixtures, which are also by-products created by clean air legislation and regulations, kiln dust and fly ash, and ashes collected by sulfate scrubbing, acid-rain clean-up. Over one hundred million tons of these wastes are generated annually in the United States alone, and create serious disposal problems. N-Viro takes these wastes, mixes them with the sludge and creates its product.

And the result is a material that is a safe, pasteurized product, a compliment to technology. This means that all the pathogenic micro-organisms that allow the indigenous micro flora to survive are killed. It is a soil; it has all the properties of a soil, historically, chemically and physically. The markets for the product are immense. Now ash is sold here; in 1993 it will be sold in the alkaline market, the fertilizer, top soil, land-reclamation and land cover markets.

What are N-Viro's processes? It simply takes sludge, de-waters it, adds alkaline admixtures, utilizes the exothermic property of the alkaline admixtures, utilizes heat, generating, the high pH, to get pasteurization, and then dries it and stores it until it is needed. There is a market for the product and it is very simple technology.

The company now has 28 active plants, worldwide. In Syracuse, Toledo, and the Bay area plants were built, two, three and four years ago, and are now in the process of being doubled, tripled, and in the case of the Bay area, quadrupled, in size. The people of the area saw the product and the technology and said: "Let's expand". That is a proof of public acceptance. Next to the Toledo facility is the Toledo yacht club. Every major rich man in Toledo has a boat there, and if the product had a smell, they would have started complaining three years ago. This is the plant which is now being doubled in size.

A further exciting aspect of technology is St. Paul, Minnesota, where a dryer is utilized to reduce the scale of operations, so that the technology can exist on a site less than an acre; but what is really exciting is that this technology can utilize waste CO<sub>2</sub> from energy producers, landfills, and waste water treatment plants. The waste CO<sub>2</sub>, which causes a tremendous problem to the world because of the global-warming problem, is run through a film, then fixated and complexed with N-Viro soil. This puts the CO<sub>2</sub> back into the earth, where it belongs. Now three waste materials are being used, to create a bio-organic fertilizer.

N-Viro's Middlesex plant outside New York City generates 800 tons of sludge a day and produces about 900 tons of product a day. This is a slight increase, but it is using a site only two football fields long and one football field wide. This plant was named by the National Academy of Professional Engineers, last year as one of the seven outstanding facilities in the United States. It has a total cost of 132 dollars, a dry ton. That compares with the incineration cost, right next door of 425 dollars a ton; pulverization cost in Boston 800 a ton; composting cost in Philadelphia of 500 a ton. N-Viro, however, sells at 132 dollars a dry ton.

In the area of agriculture; in corn production, farmers in 1991 substituted N-Viro-soil for traditional chemical fertilizers and lime and saved 32 dollars an acre. Since the average farm income was 51 dollars an acre in 1991, the farmers' income had been increased by 60%. At Mear's Park, at St. Paul, all the top soil used is N-Viro's product, for children to run and play on. This indicates how safe St. Paul feels the product is, and there are many of these types of parks throughout the United States.

The question might be asked: how about metals? Are there metals in the sludge? The answer is yes, but the metals are complexed through fixation; and as a result of this are made unavailable, converting soluble oxide and metal oxide into insoluble metal hydroxides.

Finally, resource conservation works - that is all that can be said. It takes commitment, love, truth, - but resource conservation works. By simply applying these principles, this whole idea can become a reality.

"In the final analysis, our most basic common link is that we all inherit this small planet, we all breathe the same air, we all cherish our children's future, and we are all mortal". So said J.F. Kennedy, in his great American University address, just a month or so before his tragic death. These words are also the conclusion of our message.

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**J. Patrick Nicholson** is now Chairman of the Board and Chief Executive Officer of N-Viro International Corporation N-Viro Energy Systems Ltd. The preceding company to N-Viro International Corporation, which was founded by Mr. Nicholson, was honoured in 1990 by the nationally respected "Searching for Success" program, sponsored by Renew America. The company's efforts were recognised by the Friends of the United Nations Environment Program on Earth Day, and by the Ohio House of Representatives. In 1990 the United States

Environmental Protection Agency recognised N-Viro International's soil technology as "outstanding" in America. Mr. Nicholson's company was honoured by the President of the United States in 1991 and he received the President's Environmental and Conservation Challenge Award Citation. He was the guest of the United States State Department to make a presentation at the Earth Summit in Rio de Janeiro, in 1992. He has recently been elected to the Board of Directors of the Ohio Nature Conservancy, and to the Board of Directors of the American Health Association, the American affiliate of the World Health Organisation. Mr. Nicholson's keen interests lie in politics and resource conservation policies. He has invented and developed ten international patents on by-product utilisation, and has lobbied actively for resource conservation and recovery legislation since 1976.