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ZIMBABWE: Larry Olson, Ph.D. Shares **First Impressions of His Visit** to Africa University Pg 12

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JOURNAL OF Environmental Management

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FROM THE EDITOR



hope you will enjoy this issue of the Journal; we have several great articles and columns, and a lot of information about upcoming environmental events this spring well worth attending!

Don't miss "It's All About Chemistry" this issue on page 12. Dr. Larry Olson sends us his column for this issue

from Zimbabwe, where he and his wife are currently visiting the University of Africa. Dr. Olson's subject, "Zimbabwe: First Impressions" gives us a revealing glimpse of the progress of this young university and the challenges (and successes) of providing medical care to the country's people.

Please take a few minutes to review the various upcoming environmental conferences and events advertised in this issue (and listed on the cover page). These events provide current information necessary in the environmental management field, as well present an opportunity for networking with others in the environmental management community.

We begin our 11th year of publishing with this issue of the Journal! Thank you readers, authors, contributers, and advertisers, for making this publication possible! Sincerely,

JimThrush, M.S. Environmental Management Editor & Publisher 480-422-4430 x42

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The Environmental Professionals of Arizona (EPAZ), Thunderbird Chapter of the Alliance of Hazardous Material Professionals (AHMP), and the Arizona Emergency Response Commission (AZSERC) are co-hosting the Ninth Annual Gatekeeper Regulatory Roundup Conference. This year's theme is:

EMERGENCY MANAGEMENT: For Your Site & In Your Town

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"Super Storm Sandy: What We Brought to the Table...and What She Left on Our Doorstep" (April 2nd) Keynote Speakers: Robert Rooney, Dan Porth, and Diane Fernandez with the Arizona Division of Emergency Management

"Legislative Updates" (April 3rd) Keynote Speakers: Adam Hawkins and Amanda Reeve, Policy Analysts from Polsinelli Shughart PC.

TOPICS INCLUDE:

EPCRA Tire II Reporting Violations – Defense & Strategies; Air Quality & Air Permitting Developments; Stormwater Compliance; OSHA Emergency Action & Fire Prevention Plans; Emergency Management Systems; Emerging Technologies in Groundwater Remediation; Emerging Chemicals; Dust Control & Water Sustainability; Globally Harmonized Hard Communication Standard; Sustainability in the Home & Workplace; Safety Performance Indicators; Regulatory Updates; and Carbon Footprint Evaluations.

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SUSTAINABILITY, ENVIRONMENTAL MANAGEMENT, AND PARADIGM SHIFT

"The old paradigm of simply compliance with environmental laws and regulations in the 1970s and 1980s has been changing in the 1990s into a new paradigm called beyond-compliance ... Entering the new millenium, a new paradigm has evolved. It is called sustainability."

> By Joseph Andy Soesilo, PhD, REM Western International University

Sustainability is the capacity of a system to endure. All systems, whether societal, economic, environmental, or personal, they need to able to be maintained, to be regenerative and balanced in order to last. The way we live our lives today, the way our natural resources are extracted, the energy we used, the products and services manufactured, delivered, and disposed of, will determine whether we are living sustainably or threatening our own future.

To different people, sustainability can mean different things. The most widely accepted definition of sustainability, however, is the one from the Brundtland Commission (1987). The Commission relates the sustainability concept within the context of development. In this definition, sustainable development is seen as "the development that

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There has been significant debates over the meaning of the terms used in the Brundtland definition, particularly about meeting the needs of the present and meeting the needs of the future generation. Sustainability should call for a decent standard of living for everyone and for building communities with all fairness today. It should also look at the future and decides that compromising the needs of future generations is in violation with our ethical principles. A sustainable community supposedly will be able to continue indefinitely into the future.

Central to the sustainability problem is how to plan, design, and build a world in which the earth thrives and people can pursue flourishing lives. Preventing the deterioration of our environment and pursuing the quality of life of every member of the society will lead us to the recognition that the needs of natural, economic, and social systems are so interdependent that they have to be considered in an integrated way. Sustainability strategy involves the elaboration of how the present community need should be met and how our environment should be protected. This implies that first of all, our ecological footprint should be continuously avoided in order to create a sustainable future.

The sustainability diagram displayed below depicts an integrated way to comprehend the sustainability issue. It explains the community's

pursuit for growth and development ("need") in the form of our economic activity (EA). This activity will satisfy our need and at the same time can lead us to the creation of a footprint when we extract resources from the environment and add pollution into the environment (represented the blue arrows). by Environmental footprint typically comes from a routine community's economic activity and is one of the issues that is to be addressed regularly by the environmental



manager working in the industrial sector as well as the government sector dealing with growth and development.

COMMUNITY NEED:

ECONOMIC, ENVIRONMENTAL, SOCIETAL

As a scientific concept, needs can be linked to psychology decisions made by individuals in their every day lives. In contrast, when sustainable development was formulated in 1987, the concept of needs was understood as a societal issue related to policy decisions. Needs are seen in terms of basic material necessities in the forms of food, water, and shelter which are associated with economic growth and equitable distribution of resources (1).

Meeting the needs of the future depends on how well a community balances its economic, environmental, and social needs when making decisions today. Economic needs may take the form of the needs for household essentials, industrial and agricultural growth, services, or efficient use of labor. Environmental needs refers to clean water and air, renewable resources, biodiversity, carrying capacity and ecosystem integrity. Finally, social needs may include cultural preservation, empowerment, social mobility, public participation and fairness.

In the Brundtland report the concept of needs by and large refers to the world's poor, to which the overriding priority should be given. Consequently, subsequent discussions of sustainability have shifted from a language of needs to the language of preferences that has been central to modern welfare economics. It is seen that there is a link between the question of generational justice with issues of community's quality of life. In this context a theory of justice can serve as the basis of practical reasoning which must include ways of judging how to reduce injustice and advance justice (2).

ECOLOGICAL FOOTPRINT AND DISASTER

The community's economic activity relies on the mix of the development of technology and human involvement. Faulty technologies and human errors may occur during the implementation of this activity. This may result in an incident or accident that can lead to a disaster (represented by the red arrows in the above diagram). Conceptually a disaster can be seen as the conversion of a potential danger into a reality due to an accident. The potential danger of the community's economic activity is defined as hazard and the conversion of a hazard into a disaster is subject to a statistical probability. This probability value is defined as risk.

From a system perspective, disaster of any form represents a shock and distress to the whole system. A system that is able to absorbs shocks and stresses so as to still maintain essentially the same functions, structure, systems and identity, while it also implementing strategies to mitigate future shocks and stresses is called a resilient system (3). In this regard, resilience is often viewed as a cornerstone of sustainability.

The sustainability diagram displayed above explains that the realization of the community's economic activity to meet its need can result in an unsurprising ecological footprint as part of doing day-to-day business, as well as footprint from an accident due to faulty technologies and human errors. For most environmental managers, it is not a new issue that addressing footprint and environmental mishap represents the two major responsibilities written in their job descriptions.

The central issue for environmental managers is how to respond to the challenge in such a way that the outcomes of their environmental programs truly addresses the sustainability goal. This article explores the idea of sustainability goal from two aspects. First, it looks at sustainability principles as the guidances in achieving sustainability goal and then examines the current environmental management practices and paradigm shift that is taking place in the way we deal with our environment.

ACHIEVING SUSTAINABILITY GOAL

Any organization that orients itself to the idea of sustainability and makes decisions to achieve this sustainability goal, requires to adhere to the basic principles and obligations of right conduct. These principles of right conduct are the key role in setting the context for the ethical choices that organizations make (4). Edwards observes that some principles focus strictly on values, while others include a defined methodology or standard for implementation and evaluation.

One of the standards that is widely used by the international business community is International Standards International (ISO) 14000 established in 1996. The major drive for its creation came as a result of the Rio Summit of 1992. ISO-14000 provides a business framework for implementation strategies and performance evaluation. The framework consists of four major components (plan-do-check-act) which altogether form a management tool known as Environmental Management System (EMS).

Several articles have been written in this journal about EMS. They include the advantages of using EMS, its applicability to the Arizona businesses, and the detail discussions of EMS planning components (5). When a company is looking for sustainability as a vision for the future, EMS holds the answer. As most of the Arizona businesses have already a P2 plan in place, it is a good start for planning an EMS.

A P2 plan deals with issues critical to a healthy environment, i.e., regulatory compliance and the prevention of ecological footprint through conservation of resources and reduction of pollution. In addition to addressing those issues, EMS is also designed to address (1) emergency preparedness and response, and (2) continual improvement. These two elements bear significant attributes to the system.

EMS requires that a facility establishes and maintains procedures to identify potential for and respond to emergency situations and for preventing and mitigating the environmental impacts that may be associated with them. By doing so, the facility is in the right path to resiliency. The continual improvement aspect of EMS is designed that the system will be able to maintain its conditions in preventing ecological footprint. As we all know, both resiliency and continuously preventing ecological footprint are paramount to sustainability.

Currently there are approximately 266 facilities participating in Arizona's P2 program. In 2011, the program was successful in conserving

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11,906,250 kwh of electric energy and 12,600 therms of natural gas as well as 440,407,025 gallons of water and 400,354 pounds of hazardous substances. The program was also able to reduce 1,320,881 pounds of air pollutants and 1,210,573 pounds of solid and 374,512 pounds of hazardous wastes (6). Considering that hazardous waste generated in Arizona was 42,118,000 pounds in 2009 (7), the reduction of 374,512 pounds is relatively small, representing less than 1 % of the total waste.

Of the total 266 facilities in the P2 program, however, 41 companies in 2011 have active EMS. This is a significant development for Arizona because the number represents almost a two fold increase of EMS facilities over the past five year period. The significant growth of EMS facilities is worth mentioning because for the past few years it has been difficult for facilities to put funds into EMS due to the recession and facility layoffs. Many facilities had a turnover in their environmental management.

ENVIRONMENTAL POLICY AND PARADIGM SHIFT When environmental laws were enacted in the 1970s, they were written with a noticeable attitude of command-and-control where regulations were promulgated *Continued on page 8*

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SOESILO: SUSTAINABILITY, ENVIRONMENTAL MANAGEMENT, AND PARADIGM SHIFT

CONTINUED FROM PREVIOUS PAGE

by EPA and have to be complied by the regulated industries. Plaqued with budgetary, staffing, and enforcement problems, the EPA has had to relax RCRA requirements because so few firms handling hazardous waste have been able to meet their requirements. EPA has found that full enforcement of RCRA is virtually impossible. Some companies have taken the position that fines for failure to comply with hazardous waste rules are just another cost of doing business (8).

The enactment of Pollution Prevention Act of 1990 signifies a paradigm shift in the U.S. environmental policy. Instead of the command-and-control approach, a more appealing spirit of collaboration was introduced where both EPA and the industrial community can work together to achieve the same goal in protecting our environment. EPA redirected its modes of operation from confrontation to working together with the industrial sector and the public.

Although some large corporations such as DuPont and IBM have already implemented a pollution prevention program as part of their business culture, the reaction to the new EPA approach from the industrial community by and large was encouraging. In 1995 Waste Technology News wrote that after decades of hostility and conflict, the adversial paradigm pitching business, environmentalists, and government finally shifting into a new reality where the quality of life is attainable to everyone (9).

On May 15, 2002 EPA issued an updated statement on EMS advocating the utilization of EMS across organizations. The agency encourages



the use of recognized e n v i r o n m e n t a l m a n a g e m e n t frameworks, such as the ISO-14000 standard, as the basis for designing and implementing EMS.

Another major development occurred in the NEPA program. Executive Order 13423 of 2007 directs that when the federal agencies are to address environmental aspects of internal agency operations and activities as mandated by NEPA, they are required to use EMS as the primary management approach. In this effort to align the NEPA processes with EMS, the Council on Environmental Quality emphasizes the fact that an EMS provides a systematic framework for an agency to monitor and continually improve its environmental performance.

Recently, in its 2011 news release the DOE recognizes the publication of ISO-50000 EnMS (Energy Management System) that provide facilities with a framework for continuous energy performance improvements. The department supports implementation of the ISO 50000 standards for industrial and commercial facilities through the voluntary Superior Energy Performance (SEP) certification program which will be launched soon (10).

The newly developed ISO-50000 EnMs is intentionally being drafted by ISO to parallel the ISO-14000 EMS. Although the identification of energy aspects and on energy update methodology are new to those familiar with ISO-14000, some sections such as record keeping system, document management system, training and awareness activities are comparable to both systems. Consequently, facilities that already have an ISO-14000 system in place can easily integrate an ISO 50000 into the existing management structure.

It is apparent that the paradigm in the US environmental management is changing. The old paradigm of simply compliance with environmental laws and regulations in the 1970s and 1980s has been changing in the 1990s into a new paradigm called beyond-compliance where pollution prevention idea is aggresively introduced and pursued. Entering the new millenium, a new paradigm has evolved. It is called sustainability.

Dr. Joseph "Andy" Soesilo is Professor at Western International University. Retired from ADEQ in 2008 after 20 years of service, he holds a REM designation from the National Registry of Environmental Professionals and is an ISO-14000 Certified Auditor. Andy can be reached at jasoesilo@mywiu.wintu.edu.

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ASSOCIATIONS PAGES The Journal of Environmental Management Arizona invites environmental, health and/or safety organizations

in Arizona to contribute news articles about their associations. Contact the editor at 480-422-4430 x42.



he January luncheon was held at the Local Emergency Planning Commission (LEPC) business education seminar on January 27th. John Wisner presented Pima County's new emergency operations center located in Tucson.

The February luncheon was held Wednesday, February 27th at Hotel Tucson. Fran LaSala and David Hertzberg presented the mission of the Arizona Recycling Coalition (AzRC). For information on the AzRC please visit: http://arizonarecyclingcoalition.com/.

SAEMS will conduct our quarterly highway clean-up on the second Saturday in April.

See our advertisement for the May 9th SAEMS RCRA on pg 15. If you are interested in joining or attending

upcoming SAEMS events Heather please visit our website at Shoemaker www.saems.org/.

President HYDROLOGIC

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The Arizona Hydrological Society (AHS) is now accepting applications for three AHS scholarships plus our Halpenney, Bouwer, and Avery internscholarships which are sponsored in part by each chapter and the AHS Foundation. Please check the AHS web site, http://www.azhydrosoc.org/StudentResources.html for details including intern-scholarship application deadlines. Scholarship applications are due April 30, 2013.

The AHS 2013 Symposium committee is hard at work planning the Annual AHS Symposium which will be held September 18-21, 2013, at the Doubletree Reid Park Hotel in Tucson, AZ. The theme this is "SHIFTING BOUNDARIES: Recalibrating the

Hydrologic Approach." Please contact Norm Carlson, Norm@Zonge.us, or Mike Block, mblock@ metrowater.com, to

discuss sponsorship and Executive exhibitor possibilities.



Professionals, state chapter of the National Association of Environmental Professionals (NAEP), invites everyone to visit our new website at

www.AZAEP.org. The new website has information on speakers for our upcoming meetings and locallysponsored NAEP webinars. You can go to our website to become a member, sign-up for our distribution list and register for monthly meetings.

The first monthly meeting for 2013 will be on March 26 at Grimaldi's in Scottsdale. The speaker

> THE ASSOCIATION PAGES IS FREE AND ORGANIZATION!



will be Dr. Kristen Parrish who is a nationally-recognized expert in design and construction of energy efficient buildings (including surrounding landscaping and nearby infrastructure).

AZAEP and the Arizona Riparian Council are cosponsoring a workshop to teach Rapid Stream Riparian Assessment (RSRA). The tentative dates are May 9-11, 2013. Please respond to azaep@azaep.org and Kathleen Tucker at kat621@cox.net with your interest in attending this field workshop.

AZAEP sponsored the NAEP webinar on Environmental Planning under MAP-21 transportation

Projects. The webinar was hosted in Phoenix at AMEC and in Tucson at HDR on March 12. NAEP webinars are Patricia free to AZAEP Mariella, Ph.D. Members! Vice President



ARIZONA CHAMBER of Commerce and Industry WWW.AZCHAMBER.COM Arizona Manufacturer's

The Arizona Chamber of Commerce and Industry and the Arizona Manufacturer's Council will hold its 2013 Heritage Awards Dinner on April 26, 2013. The Council Manufacturer

of the Year Summit and Awards Luncheon is scheduled for May 31, 2013. Mark your calendars for these two important events.

Environment Committee Breakfast Meetings continue to be held on the second Wednesday of each month at 7:00 AM at the Sheraton Phoenix Airport Hotel.

More information about all of these events can be found on the Arizona Chamber's web page at www. azchamber.com.



The Southern Arizona Chapter of ASSE has maintained a very busy schedule this winter and spring. January included a tour

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of Raytheon. In early March, we joined the Arizona Chapter in Phoenix for a tour of their award winning water treatment facility as well as assisted the Veterans of Safety in hosting Dave MacCollum's Presentation on Design Based Safety (March 6-7). Our regular lunch meeting presentation on March 12 covered safety related issues with volunteers in Habitat for

Humanity construction projects. Our April meeting includes a tour of the Caterpillar proving grounds. Plans are currently n the works for our Annual Awards Banquet scheduled for mid-late May. Development of our student chapter at the U of A continues. For further information on these topics and on OSHA training opportunities, John Roads please visit http://SouthAZ.ASSE.org.



The Alliance is hosting our 2nd Biennial Air Quality Luncheon Thursday, March 28th at the Grace Inn in Ahwatukee. All are invited! (See advertisement page 9). Our guest speakers will be the

Directors of both Pinal County and Maricopa County Air Quality Departments, Bill Wiley (Maricopa) and Don Gabrielson (Pinal). The topic is the current status of PM and air quality issues in Maricopa and Pinal Counties. The audience is anyone interested in PM issues, including environmental professionals, the construction industry, rock product industry, Continued on page 13

10 Journal of Environmental Management AZ







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BEYOND SOIL, WATER, AND AIR: A New Definition of THE ENVIRONMENT



Abdellatif A. Mohamed, Ph.D.

ach scientific field has its own set of technical terms that are used for communication among scientists. Each science branch hast a higher authority that provides standard definitions for technical terms used in a given science branch. For example, the International Union of Pure and Applied Chemistry (IUPAC) is the Ultimate authority for chemistry.

IUPAC not only standardizes technical terms but also continuously refines and develops the definitions of technical terms to accommodate the ever evolving scientific discoveries.

Likewise, the word environment is used or heard by the great majority of human beings more frequently than any other term. Almost everyone has become alert to the hazards pollution of the environment and demanding environmental friendly products. However, hardly anybody stops to think if they can you actually define the word "Environment." This essay is an attempt to explore the available definitions of the "Environment", if it really meets actual expectations, and the need of refining and developing the definition.

In order to protect our environment we must precisely define the word "Environment." Ecologists define the environment as "the air, water, minerals, organisms, and all other external factors surrounding and affecting a given organism at any time." The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) section 101(8) defines "environment" as "(A) the navigable waters, the waters of the contiguous zone, and the ocean waters of which the natural resources are under the exclusive management authority of the United States under the Fishery Conservation and Management Act of 1976, and (B) any other surface water, ground water, drinking water supply, land surface or subsurface strata, or ambient air within the United States or under the jurisdiction of the United States." The Codes of Federal Regulations (CFRs), the Arizona Revised Statutes (A.R.S.) or the Arizona Administrative Codes (A.A.C.) do not define the word "Environment." However, historically, it appears that the understanding of the Arizona Department of Environmental Quality (ADEQ) of the word "Environment" is closely consistent with the CERCLA definition. The exact interpretation of the word "Environment" depends mainly on the program, the media of concern, and the pollution source. The common understanding for the word "Environment" among scientists and regulators is collectively Soil, Water, and Air as affected by common sources of pollution such as emissions, point and none point source discharges, and accidental releases of harmful substances. However, there's no collective list of what should be included in the effectors (sources that may adversely impact) list of the "Environment."

People have finally woken up to the danger we have posed to our environment because of our indiscriminate use of the natural resources and modern technologies. We humans, though born superior to all the other species on the earth, are also the most selfish ones on the planet. For centuries we have been using the natural resources like water, air, land, plants, trees and even other animals for our comfort, without stopping to think for a minute the damage that we might be causing to them and more importantly, the damage could be irreparable. What we should be concerned with nowadays is the natural environment. All the physical and natural things that compromise our surrounding should be included in the definition of the "Natural Environment." Pollution is obviously the major source of environmental impact but not the only source. A pollutant is a waste material that pollutes air, water or soil. Three factors determine the severity of a pollutant: its chemical nature, the concentration and the persistence. Not all pollutants have been taken into consideration of scientist and regulators. For examples light pollution, sound pollution, genetic pollution, and electric clouds have not been considerably studied or regulated.

The Ecologists definition of the "Environment" closely addresses human needs and expectations. The word "Environment: should include the many things that make up our surroundings. With the everyday swift evolving technologies, scientists and regulators should continuously modify and expand their list of pollution sources that may adversely impact the human health and the "Environment." Some of the pollution sources that have not been notably addressed by the scientific or the regulatory communities and increasingly becoming alarming are: (1) electromagnetic fields pollution resulting from electric, cellular, broadcasting cables and transmitters, (2) radiation clouds resulting from televisions, computers, refrigerators and many other electric products, (3) the evolving Genetically Modified Organisms (GNMO's) to meet the increased demand for food. For example, the soybean seeds spread allover the world by Santanos company. This is a soybean variety that has been altered to resist the Roundup damage. Roundup is used to spray soybean fields to control weeds without incurring the high cost of manual weed control in the soybean fields, (4) poly chlorinated biphenyls (PCB), none biodegradable byproduct of many pesticides and herbicides such as Diaznon, (5) sound pollution: excessive, displeasing human, animal or machine-created environmental noise that disrupts the activity or balance of human or animal life, and (6) light pollution: excessive or obtrusive artificial light.

The adage "Better late than never" applies aptly to the urgent need to develop an accommodating definition for the term "Environment" that attains all the environmental and human health impact of all the ever evolving technologies.

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ZIMBABWE: FIRST IMPRESSIONS

One week in Africa hardly qualifies me to even venture an opinion, much less draw conclusions. But I can give you some first impressions of Zimbabwe.

As I mentioned in my last column, my wife and I traveled to Mutare, Zimbabwe at the invitation of Africa University to participate in a Colloquium celebrating the 20th anniversary of the school and spend some time there with the faculty. Founded by the United Methodist church, it was the first private university in Zimbabwe and has grown to 2000 students from 29 African countries. For such a young school, it managed to assemble a most impressive array of researchers from a number of top universities in Africa, the World Health Organization, Harvard, University of London, St Jude Children's Hospital, and Dr. Peter Agre from Johns Hopkins. Dr. Agre won the Nobel Prize in Chemistry in 2003 for his discovery of aquaporins, the water channel proteins through which water can pass through membranes. But in 2008, he became the Director of Hopkins' Malaria Research Institute and now is devoting his



career to trying to solve this dreaded disease. It was a great privilege for my wife and I to spend an evening with him at dinner.

Since the Colloquium was on Neglected Tropical Diseases, Malaria, and Non-communicable Diseases let me give you some impressions of health care here. Everyone knows that Africa suffers from a tremendous

scourge of diseases such as malaria, tuberculosis, AIDS, schistosomiasis, leprosy, sickle cell anemia and many other horrible afflictions. But it is also undergoing an explosion of previously rare noncommunicable conditions such as diabetes, heart disease and cancer. In fact, Africa now has about the same incidence rate



Dr. Peter Agre (left) with Larry Olson, Ph.D.

of these as developed countries and so it is fighting on two fronts that we in the U.S don't have to worry about. Predictions are that within a short

time, there will be more deaths from these "modern" diseases than from the traditional ones.

Africa University runs a clinic for AIDS patients and this was a truly memorable visit. The impact of antiretroviral therapy drugs for HIV is dramatic. The women at the sewing machines are all HIV positive, yet they are healthy and well nourished and walked many miles to come to the clinic. The nurses there told us they used to have to spend a lot of time teaching care givers how to care for bed ridden patients. But now they are "walking on the streets" and able to care for themselves. In addition to classes on health, the patients are taught marketable skills such as sewing, how to grow healthier foods, and the importance of good nutrition. There is a small garden and a horticulture teacher. They are also given pregnant rabbits or chickens in hopes that they can not only feed themselves but also generate some income.

As hopeful as that clinic was, the Old Mutare Hospital showed the challenging conditions with which many still have to live. There was virtually nothing available here beyond some IVs, medicines, and the ability to suture. No

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laboratory equipment, no working X-Ray machine, and no doctor on site. Every patient family had а member(s) at their bedside and they were needed because there was no food provided and very little staff.



The AIDS and pediatrics ward were hard to see, but the post-partum maternity ward was much happier. Notice the malaria nets, which they assured us were used every night.

We have another week in Zimbabwe and lots more questions to ask. It has been a wonderful experience thus far.



ASSOCIATION PAGES

CONTINUED FROM PAGE 10

mining industry, local government reps, and interested Arizona residents. Come & join us in the discussion!

AQ Luncheon attendees are welcome to display your organization literature at the "Attendee Literature Table". The material must be related to AQ issues

or related services. Space is limited, so let us know when you register online if you plan to bring literature (brochures, handouts, business cards, etc.) Cost is \$30 if you register before March 21st (\$35 after that date). Register online at www.azalliance.org or call our office at 480-422-7392. See you there!





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SURVIVING IN CHANGING TIMES

It's not business as usual anywhere these days but some survive the chaos better than others. Arizona Forward's Stewardship Summit is an inspirational forum on how to prosper in times of uncertainty as individuals, communities and holistically, as the Grand Canyon State.

A statewide mayoral panel will showcase innovative initiatives that Arizona cities are undertaking to promote more sustainable places and how communities are working together and partnering with the private sector. Participants include: Phoenix Mayor Greg Stanton, Tucson Mayor Jonathan Rothschild, Flagstaff Mayor Jerry Nabours and Mesa Mayor Scott Smith, the vice president of the United States Conference of Mayors.

A keynote address by Leonard Brody, a business visionary, author and president of one of the world's largest online news conglomerates, will

provide a business perspective on thriving in a changing global marketplace. He'll talk about the kind of changes we can expect in the next 365 days impacting technology, demographics and our natural environment. For information, visit Diane Brossart arizonaforward.org or call (602) 240-2408.



Journal of Environmental Management Arizona 13





SUSTAINABILITY AND SUSTAINABLE DEVELOPMENT

Nicholas R. Hild, PhD.

EXPORTING GAS

"...(we will be) looking for the "sweet spot" that allows for some natural gas export revenue without adversely impacting energy prices in the U.S. and thereby missing the economic advantages for consumers and manufacturers...."

SENATOR RON WYDEN (OR), CHAIRMAN, SENATE ENERGY AND NATURAL RESOURCES COMMITTEE, 2013

You may remember a previous column about the 'fracking' boom in the midwestern states from Texas up through North Dakota that has the politicians and the Big Oil companies looking for ways to use all that new-found petroleum and natural gas. What that column didn't state (and what was unknown at the time it was written), is that there is a movement by our political energy policy makers in D.C. to figure out how all that excess oil and gas can be "exported" to foreign countries instead of trying to develop alternative fuels from excess oil and gas that will be more sustainable than continuing to fuel our transportation systems with petro (gas and diesel) into the next century. It turns out that our elected politicians who make up the



Tuesday, June 18, 8:30 a.m. – 4:00 p.m. Joel D. Valdez Main Library Conference Room 101 N. Stone, Tucson, AZ

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Senate Energy and Natural Resources Committee want to make excess' natural gas available as an export without even considering what that strategy does to limit our alternative fuel research choices. Of course, those politicians appear to be (as usual) interested in keeping the Big Oil companies in business here in the U.S. supplying our gas and oil needs for the next several decades—Big Oil companies will be who profits from sales of 'excess' petro, not consumers—and there will certainly be no concern for the unsustainability of that strategy or for the ever-increasing size of the carbon footprint it will generate as we continue in a fossil-fueled future!

Since the first OPEC oil embargo in 1973-74, this newly-found (fracking) technology that promises to make the U.S. '*energy-independent*' represents the first time we can dramatically reduce our dependence on foreign oil and gas...BUT! It should also be clear that this new-found oil and gas that comes from the fracking fields, represents the first opportunity the U.S. has had to look seriously at how we might use the natural gas (and oil) to wean ourselves from gasoline and diesel as the primary fuel for our cars and trucks as we make our way toward '*energy independence*.'

You haven't read about this in the papers or seen it on any news programs because this information has not been generally made available to the public. So we can thank the Marten Law Firm's research team (Martenlaw.com, Feb 2013) for their well-researched article titled, *Controversy Over LNG & Oil Exports Heats Up As Production Expands* by Attorneys Michael Dotten and Dustin Till, for making this news available. Their article references their paper, *Energy Policy in the Second Obama Administration*, (2012) which does a really thorough job of tracing the history and reasoning behind why congress wanted to restrict sale of oil and gas to foreign countries beginning all the way back in the mid-1970's when congress (then) passed the U.S. ban on crude oil exports in the Energy Policy and Conservation Act of 1975. That law directed the President to ban the export of crude oil unless, "...a determination is made that such exports would be consistent with the national interest."

Seems like that sends a pretty clear message that exporting oil and gas is clearly forbidden!

In addition, the new bills introduced in the last few months, appear to be aimed at reinforcing those 1975 restrictions even more, with some limiting the sale of excess oil to ONLY U.S. customers while others would prohibit the Federal Energy Regulatory Commission (FERC) from licensing LNG export terminals to be built. So, there are some in congress who believe we need to get our priorities straight when it comes to "excess" oil and gas utilization for the benefit of U.S. consumers.

Unfortunately, and what is really disappointing is that Senator Ron Wyden (OR), the new Chairman of the Senate Energy and Natural Resources Committee takes all those bills that are intended to restrict the exporting of gas and oil as a challenge, noting that a bipartisan bill introduced in the Senate will give NATO members, Japan, and certain other (unnamed) countries preferential treatment with respect to LNG exports—he's quoted as saying that "... his committee will be looking for the "sweet spot" that allows for some natural gas export revenue without adversely impacting energy prices in the U.S. and thereby missing the economic advantages for consumers and manufacturers.... (that's politico-speak for, 'there are ways to get around restrictions even if they are law!

So, we are indebted to the Marten Law Group for bringing this to our attention since it is unlikely anyone would have known about our policy maker's under-the-radar plans for exporting our excess shale oil and gas until it was too late to stop it. What is important here is, if you believe that such a strategy has the unintended consequences of keeping our transportation systems on a petro diet for the foreseeable future, to lobby your concerns to your local congressman before the strategy gets out of committee...it still may not be too late to have an effect.

But one thing is clear: if we don't lobby our congress now to use that excess gas and oil to do the research to find and make alternative fuels for our transportation systems of the future, we will we need to explain why we passed up a golden opportunity in 2013, to utilize all that excess fracking gas to wean our entire transportation system from its carbonspewing, greenhouse-gas-emitting, polluting ways of the past, when we had the chance? And, generations from now, how will we explain that to our children's, children's

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