

Implications for Safety and Health Training in a Green Economy
October 16, 2008
Chapel Hill, NC

9:00am

Welcome and Overview

Joseph “Chip” Hughes, NIEHS

- Exploring ideas in sustainability in a “green” economy

Sam Wilson, NIEHS

- Want to emphasize how important the WETP program is to NIH
- Important that we have an emphasis on the translational aspect of our work
- Been a fan of the innovative and original communication materials – example: hurricane booklet

Key Note

Dave Foster, Blue-Green Alliance

- DeNora incident in PA in the 1950s
- Recalled the history of the labor movement
- Clean energy economy will make way for new work, new unions, new social agenda

- We face the most serious economic crisis of our generation
- We have to construct a new economy, new regulations, and new definition of values in this country

- What is the green economy and green jobs?
- Green job is a blue collar job with a green purpose
- Doing the jobs we already have to clean up the environment

- BG Alliance is founded on the premise that the environmental challenges in the 21st century will create the jobs of the future

- Foster was brought up on the thought that is was old jobs vs. the environment
- Environmental investments create jobs
- Every piece of equipment needs operators and maintenance crews

- Environmental regulation was the stimulus to creating new processes that save electricity and increase productivity

- Energy, environment, economy problems can be solved
- \$100B investment over the next 2 years will create 2M new jobs

- 6 strategies to stop global warming
 - Wind
 - Solar
 - Advanced biofuels
 - Retrofitting our buildings
 - Expanding our railways
 - Smart grid transmission
- Global warming is the most important economic issue of our time
- Global warming and discharge of harmful chemicals are related
- FDR if he were alive today, would call the initiative a “New Deal for a Green Economy”
- A poisonous job is no job at all
- Role of training and education of workers is absolutely central to the transformation of today’s toxic sites to the green job sites of the 21st century
- February 4-6, 2008
- Good Jobs, Green Jobs Conference
- Washington, DC

9:40am

Plenary 1: Key Policy Drivers for Green Initiatives

Moderator: Chip Hughes, NIEHS

J. Phillip Thompson, MIT

- Have a group at MIT who think about the consequences of transforming to a green economy
- Policy issues related to green jobs
- American Planning Association, US Green Building Council have lists for “greening” towns and cities
- Miami may build a new nuclear reactor or institute initiatives that reduce energy consumption – don’t know which one will be chosen
- The political will must be there in order to transform to a green economy
- At state and local level – NYC and Chicago want to retrofit buildings

- Stormwater runoff management must be done because our ocean is in worse shape than our air
- Materials purchasing – where are these products going to be built?
- Manufactured housing - can't build for the future with stick built housing
- We need to work together in a global economy

Jason Walsh, Green for All

- Green for All is based on Oakland, CA and started September 27, 2008 to deal with poverty and corollary poverty, and environmental destruction and climate change
- Poor communities have bore the brunt of toxic waste
- Single solution to both problems – build a green economy that is strong enough and inclusive enough to lift the community out of it
- Green jobs is at the heart of it
- The Green Jobs Act signed in 2007 through the Energy Independence and Security Act
- Authorized \$125M per year – challenge is to get funding
- Creates an Energy Efficiency and Renewable Energy Worker Training Program
-
- Energy Efficiency and Conservation Block Grant Program
- New program within DOE, authorized at \$2B per year
- Impressive piece of legislation
- Money used for “greening” cities, counties and towns

John Warner, The Warner Babcock Institute for Green Chemistry

- Come to a point in our society where we must reevaluate whom to believe when talking to those who understand science (designers), and those that don't
- The manufacturing process to create most chemical sensors emit more chemicals than the sensors can ever sense
- The manufacturing process to create solar panels uses so much energy that it takes years to save the energy of the solar panels
- The supplying of who is creating the new materials is not being met

Question

Have people developed a public awareness campaign to help understand issues with the chemistry processes that develop the materials?

Answer

In San Diego there is 40 acre brownfield that was turned into a market plaza
Created a afterschool science center through donations from CalTech and companies

Question

How can we ask how to turn on the funding stream?

Answer

December 12 MA Governor Patrick will be talking about how to spend the \$1B funding
A lot of opportunities are at the state and local level

Question

Thoughts on the kind of job displacement this agenda will create?

Answer

Particular communities will be hard hit
We need to think about community development and make the investments necessary

11:10am

Plenary 2: Green Chemistry

Moderator: Paul Renner, Labor Institute

Terrence Collins, Institute for Green Science, Carnegie Mellon University

- Green Chemistry and Worker Health and Safety Training
- Wrote counter viewpoint to a colleague article saying that scientists should focus on more than just the science
- Green chemistry is most related to toxicity and ecotoxicity
- Factors:
 - Must focus on education, takes 10 or 15 years
 - Fascinated by entrepreneurs
 - Investment
 - Business
 - Advocacy
 - Research
 - Internationalism
 - Environment

- We are more complicated and vulnerable to impacts of chemicals in the environment
- Chemicals can interact with DNA causing mutations that may lead on to cancer
- Endocrine Disrupting Chemicals (EDCs) are to the chemical enterprise what subprime mortgages are to the financial sector – if we persist in not acknowledging and addressing them, they will bring the enterprise down

John Warner, The Warner Babcock Institute for Green Chemistry

- In 1980s, he went to MI to determine whether a chemical was an endocrine disruptor
- Green chemistry gets into the “design” moment – where scientists have the greatest opportunity to prevent harm
- In 1990s, talking about pollution prevention and created Non-Covalent Derivatization (NCD), went to EPA for approval, and they denied the process
- Far safer, far more environmental friendly
- There was no science for making safer materials
- Created 12 principles of green chemistry
- Green chemistry not a policy, it’s a science of how to invent and make a molecule in environmentally friendly way (safe materials)
- Consider the entire lifecycle of all the materials in the environment, there is something wrong with >90%

Evan Beach, Center for Green Chemistry & Green Engineering, Yale University

- Green engineering has much in common with green chemistry because of the importance of design
- For a typical product, 70% of the cost of development, manufacture and use is determined in its design phase
- Want to get away from design and work more with the inherent hazard properties of a materials
- Performance must evolve from function, cost, quality, safety to include environment, human health and social wellbeing
- Design
 - Inherently benign, resiliency, life cycle, systems thinking, intended lifetime
- Innovation
- Provide service without physical entity
- Redefine the problem, ex: getting caffeine out of coffee beans
- Instead of extracting the caffeine, engineer plants that grow caffeine-free coffee beans
- 12 principles of green engineering
- Problem involves bringing conservative industries onboard

Denise Patel, NJ Work Environment Council

- In US, for chemicals, it's innocent until proven guilty
- WEC has plans to develop a NJ state green chemistry policy
- Last year NJ passed the Inherently Safer Technology (IST) act
- Many aspects are like green technology
- All 49 chemical plants in NJ have implemented aspects of IST
- Set up training with about what IST is, what it means for workplace health and safety, and how we can all make NJ safer and more secure
- Now IST covers electricity facilities and oil refineries too
- In Summer 2008 WEC piloted the first ever green chemistry training, Tony Mizocchi Center created the content

Question

When you are doing your brainstorming phases, consider the effects on the end user

Question

37 million chemicals listed, not 8,300 – why the discrepancy?

Answer

37 million is the different compositions of matter

There are problems with the 8,300 that we need to focus on

Question

Any intersection between nanotechnology and green chemistry?

Answer

Problem with the toxicity of nanoparticles

Nanoparticles sometimes change the toxicity of other particles

University of Oregon has a center for Green Nanotechnology

1:30pm

Plenary 3: Environmental Justice & Good/Green Jobs for All

Moderator: Sharon D. Beard, NIEHS

Donele Wilkins, Transcending the Movement

“The Case for Change”

- Detroiters Working for Environmental Justice
 - raising awareness
 - focus: clean air
- Lead (Pb) poisoning: widespread Pb found in soil (widespread)

- 22% of African Americans are exposed to Pb poisoning
- **Brownfields Projects** – downtown Detroit area
History of the region: 40,000-65,000 contaminated properties
Environmental Justice Activists – focused around industry in neighborhoods
- Activists work with the EPA and other agencies to yield equal protection for everyone under the law
- **Opportunity – Fighting against & Vision Creation**
 - look at the community
 - leverage resources
 - revitalizing
 - share the wealth
- **NIEHS with DWEJ – green jobs specialization courses**
- **Green Jobs**
 - skills and ability to develop skills
 - address legacy
 - make available skills sets with courses specialization
- *Sustainable Vision –Green Vision*
- **Solutions:**
 - promote civic engagement
 - educate
 - multi-disciplinary collaboration
 - encourage sustainable development
- **For More Information:**
<http://www.dwej.org>

Michele DePass “Ford Foundation”

-Minority Workers-

- **Ford Foundation is known as “The Third Sector”**
 - Second largest in the world
 - \$750-850 million given away each year
 - \$12 billion, endowments
- Seed innovation and support many EJ organizations

- How to use foundation in leveraging?
Ad hoc group – Just Green – funding
- **3 Cubed D:**
Economic
Environmental Justice
Environment
Democratic Parties (Participation: bring people to the table)
- **Example Org:**

Tides, New World, etc. – website will be available
- Needs – Cost-benefit analysis (linkages and connections)
- **Living Cities Collaboration (www.livingcities.org)**
Collaborators: Second largest corporation sector, pull money by members with Federal, State, and Local
Green working group on green cities; economies; building
- Green Economy, what it means?
-Potential investment
-Funding feasibility
-Trade unions get involved and move toward their agenda
-banks, foundation
- **Collaboration – Health & Environmental Funders Network**
Funders: Social change strategy
- green chemistry
-seed innovation in green chemistry
-healthy: people, ecosystems, and communities
(Cathy Sessions, coordinator)
-work to protect particular populations

Jason Walsh, Green For All

- Role of work force development:
-good green jobs for all
- Workforce development for green jobs:
- Work on the best – best practices
 - 1) Green work force devel. => cohesion and development

- 2) Build green jobs to scale – build on existing training systems out there
 - 3) Creating a green economy – new industries too; workforce development – embedding green curricula in courses
 - 4) Don't isolate green jobs from other industries
 - 5) Certifications and credentials
 - 6) Make transition as an opportunity to make jobs that work:
 - education connected with skill train
 - policy drivers, environmental factors -> job training, good new jobs
- low road economic development
-high road- green collar job creation centered on people who want to learn the work

Kirk Laflin (PETE, Executive Director)

- **Community Colleges Preparing Green Jobs**
 - national non-profit
 - work with 400 community colleges
- **US Environmental Programs**
- **What's driving Business and Industry?**
 - triple bottom line
 - Sustainability Reporting
 - Green Collar Worker- employed in environmental sectors of the economy (*As defined in Wikipedia*) and includes professionals
 - Community Colleges serve as access points
- **Sustainability**
 - impact on Earth
 - the BIG picture
 - smart growth development
 - low impact development (LID)
 - green roofs- city
- Zero net housing- producing energy on site
"Triple Bottom Line"
-community colleges incorporate it into their programs
- solar science technology
- PETE instructor conferences (two times a year)
- Defining Energy Technology and Services
-community colleges:

-what they are doing, planning to be there more to meet commercial industry needs.

BREAKOUT SESSIONS, 2:50pm

Green Chemistry

Facilitator: Paul Renner, Labor Institute

- **1910 Standard**
http://www.osha.gov/pls/oshaweb/owastand.display_standard_group?p_toc_level=1&p_part_number=1910
- **Green work all along...the mantle of green**
- 120 31.34 geared toward crafts
- Emergency Response Program:
 - recognition and prevention
 - hazardous materials
 - All of the above:**
 - 1) *grounding of standard*
 - 2) *green certification*
 - 3) *'thought stimulators'*
- **Its All Green:**
 - better explain exposure
 - eliminating
 - prevention
 - hierarchy of control
 - alternatives
 - systems approach- reduce exposure
 - a lot of approaches in 17 weeks of training
 - integrations
 - exposure reduction
 - continuum from house to school to work
- **Green Chemistry:** Refinery (prevention of exposure; safer chemicals to use)
Firefighting (Green Chemical Policy) –2-Fold:
 1. Chemicals firefighters are exposed to (use PPE)
 2. Look at chemicals for Firefighter protection
 3. Chemicals firefighters use to fight fires
- **Substitutions made, less hazardous—more problems**
 - statewide environmental issues
 - rep. chemical workers

-substitution

- **Carbonox**, a cleaner with a pH 13...hazardous when people do not know how to handle correctly, or are not instructed on its use

-design phase: what and how you use products

-industrial hygiene

-waste management covered in a 40 hour class

-green concepts with people protecting self

-great technologies now – problems later

-yes, to some extent principles must be taught

- **Incorporate Bigger Picture Analysis, Get People to Think More about the Concept**

-how to prevent

-how to change policies fundamentally

1) Larger Discussions, Bigger Picture:

-how/what programs can incorporate Green?

-preserving jobs is conserving, creating new jobs

REECH –Ahead or Behind Curve – Green technology

-new technology

-new non-toxic chemicals

2) Social Unionism: language used to talk about things

-everyone should be taught chemistry—we can all learn it, and we learn it in different ways—people are just crappy at teaching it (direct from discussion)

- **Green Certificate Program:**

-standardized program, make core certification

-preserving concept of green; don't force it to match and then have it mean something different

- **Green Building Alliance**

Leeds Certificate – rigorous is the procedure—the Certifying Body—criteria for certification!

- Chemical Industry: should set policy

-worker participation

-understanding concepts

- **What new technology should be used?**

- how to use it?
- discuss it?
- how can changes be input?

- **Is GREENER SAFER???**
 - less hazardous
 - greener can still be unsafe, even though it is less toxic
 - this needs to be defined: the context and the worker
- New technology, looking back at past discussions
- Green Chemistry : getting rid of hazards

Environmental Justice and Good/Green Jobs

Facilitators: Amanda Allen, Jerry Repka II

What are we currently doing in our training and work that could be considered green?

- Solar Panel installation job training – Palo Alto – Solar Panel Institute is doing the training (CPWR) in conjunction with BMWTP. 6 weeks for this component. Willing to share this curriculum.
- Energy Audits – consultants are providing 24 hr training w/ DWEJ (EPA has congregation conservation – reducing energy costs and carbon footprints in churches). There are curricula available. Wright College in Chicago provides [Home Energy Rating Services \(HERS\) certification](#) (24 hrs of classroom + 6 audited auditing sessions). Chicago weatherizing homes – installs installation, window caulking. OAI looking into T-the-T course.
- Hazardous waste cleanup
- Carpentry – green building and materials reuse
- Build institution in New Orleans, starting in 2010. [Prince's \(of Wales\) Foundation For the Built Environment](#).
- Emergency Response
- Weatherization – not necessarily trained in hazardous waste remediation (confined space training; lead mold and asbestos - OAI doing already)
- [KOSH groups](#) – U Mass
- Bio-brick – air pockets – create insulation, uses thin layer of adhesive.
- [Future Proof](#) – in New Orleans
- School of Architecture at MIT – Phil works with a guy that can help us.

We're making things green, but are they safe for the workers?

Solar panel installation and wind turbines – are we seeing more falls? Is that really green?

We have to play the role of advocate for health and safety.

If you are a LEAD certified building, you must have H&S.

Smart Growth Coalition for Livable communities – green bldg policy mtgs next week

Apollo alliances (Raquel)

Green Jobs Act and federal funding – we need collaboration and ensure health and safety training and language is in the act. (amend it). True of housing and transportation bills. We need to fight for H&S.

Green for some, not green for all.

Less sprawl. Building everything you need close by so you can walk there.

Funding Options

OAI's Green Corps Program gets funding from city of Chicago and EPA. Put together a patchwork of funding to create their programs.

Clinton Climate folks have partnered with lots of organizations.

Community Development Block Grants funding. Put in an on-the-job training.

DWEJ is creating the work and DOING the work that they train for so they don't have to wait on someone else to hire their staff.

Program Related Investments (PRI). Foundation assumes the risk and gives a low rate loan. Not a grant. Terms are different from a bank. More flexibility and options. Foundations are doing these. Ford, MasterCard, Kellogg, Gates all have PRIs. Recoverable Grant (RG) – a grant that is to be recovered. But that is also high risk. Grants are seen as investments. At Ford Foundation the PRI and RGs are combined; other Foundations may do it differently. RGs are basically not expected to come back and are much less money. PRI is major funding and is recoverable.

Missing: discussion on policy. Public sector (not the private sector) needs to fund infrastructure improvements.

We're giving corporations subsidies, but not making them change their ways and forcing them to come up with new technologies and practices.

Habitat For Humanity – great partner for all of this. They are receptive to working with job training programs for real-world experiences. But they don't seem to be interested in the H&S discussion. Also interested in going green.

Citrus based cleaners are so much harder to use so H&S is not being taken into account. Chemical cleaners were used to eliminate workers (strong cleaning solutions = fewer workers).

Deconstruction vs. Decommissioning

Involve the students. Involve the local communities.

Upcoming RFP suggestions – include curriculum development around green jobs.

Green Remediation and Green Construction

Facilitator: Tim Fields, MDB, Inc.

What is Green Construction?

Jim Platner, CPWR

- So far we have taken a very broad view of green, to include social justice
- Green Construction includes mostly materials, construction site, occupant health and safety (indoor air quality)
- It does not look at construction worker safety
- We have to work to make it include these issues
- Recycled content
- Client is the driver for LEED certification – whatever the end user wants

Gary Gustafson, LIUNA

- Looking to put “green” into a construction site
- Construction projects need to tap the local workforce in order to train the next generation of workers
- Educating workers to let them know what their carbon footprint is

Examples of Green Construction

- City Center in Las Vegas
- All built to LEED certification
- Impact of being green could make the work environment more hazardous
- LIUNA gets calls from NYC construction companies asking for “green” training
- Need to train the workforce to reduce, reuse and recycle
- University of Oregon study says that nonfatal injuries at green construction sites are higher than regular construction sites because people are performing tasks that machines would normally handle

EPA Green Remediation Primer

Voluntary Examples of Green Remediation

- Achieve Energy Efficiencies
 - Reduce Air Emissions
 - Minimize Water Use/Maximize Water Reuse
 - Minimize Land/Ecosystem Impacts
 - Minimize Waste Generation and Reuse Materials
 - Reduce Greenhouse Gas Emissions
-
- EPA Developing guidance for contractors to put contract language to consider how to achieve the six examples of green remediation
 - EPA has training program for on scene coordinators on how to consider green principles during environmental remediation
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- US Green Building Council's LEED – Leadership and Environmental and Educational Design (correct?)
 - LEED provides a scoring system for both new construction and retrofitting
-
- American Federation of Teachers (AFT) is pushing Collaborative High Performance Schools (CHPS) in CA which takes into account green designs in schools
 - Biggest problem is the upfront costs
 - Would like to emphasize the long-term benefits of green building, including the fact that children will be spending 8+ hours a day there

Actions

- Need for public outreach Education Programs (focusing on building life cycle)
- Need for state and local government coordination and support

What are the implications of Green Remediation/Green Construction for worker health and safety? For worker training?

- Worried that the government will do less than they are now to enforce the worker safety and health regulations
- Mindset rather than a skill set that we need to focus on – worker needs to understand the impacts
- We need to incorporate green safety and health modules into the current training
- There is a need for research on worker impacts
- There is a need to perform training on health and safety trainers (train the trainer) for GR and GC
- Would OSHA classify green vs. non-green jobs to see which are more hazardous?

- Probably not
- There is trade-off between impacts on worker and environmental benefits
- We must consider the impact on NIEHS training programs
- Add modules to the training
- Problem with superfund training is that the worker is not educated about the physical hazards

Benefits of GR/GC

- Benefits will be that the new economy will dictate mandatory “green” policies
- Greater public health protection
- Increased employability
- Higher productivity
- Healthier workers
- More reuse

Implications of GR/GC for NIEHS WETP and Awardees

- Be the bridge between protecting the environment and protecting the worker
- Perform a “green” impact assessment on NIEHS training
- WETP wants to do a new RFA by July 2009, complete assessment by then
- Need to develop a baseline “green” course (including work base learning)