Connecticut Science Supervisors Association

Newsletter

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President's Message

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Another school year is flying by. It is March and instead of thinking of the beginning of spring, we're all thinking about CMTs and the CAPT and even about APs. The end of the school year will be upon us sooner than we would like. In a recent issue, I wrote about safety concerns and liabilities when I realized that my high school had far more chemicals than we would be using in the next two years, and some chemicals in inventory that had literally been there for decades! We were pro-active. We consulted with several professionals and our local fire marshal, and we came up with a plan for remediation and recycling (note: you'll want to label your waste chemicals as "chemicals for recycling" rather than "chemicals for disposal"). We established a three-month time-line and priorities and we involved a lot of people as part of the solution. I can't say it has been an easy task to begin to tackle, but there is truth in "many hands makes light work". If you have inherited a similar situation, or have come to the realization that "standard practice" hasn't been up to standard in your district (the times have changed!), seek help. Ask questions. Our members have wonderful experience and wisdom. CSSA is one of the charter members of the Connecticut Science Safety Network (CSSN) (along with CSTA, the CT Academy, and several other organizations), and so I want to endorse the upcoming workshops we are planning for Developing and Updating Chemical Hygiene Plans (CHP). Look for details in the next month, and look for additional workshop titles next fall. We plan to have repeat sessions of the CHP workshop in the eastern part of the state (Goodwin College, East Hartford) and the western part of the state (CAS, Cheshire).

As science leaders in our districts, we are also responsible for the professional growth of our science teachers. How do you handle that responsibility? Do you bring in outside consultants? Do you encourage your teachers to go out and attend professional development activities? Do you send them to NSTA? Do you bring them to CSSA workshops? This year's workshops have been focused on the theme of professional development (you couldn't help but have noticed that by now). We are striving to empower each of you to conduct your own needs assessment, and using good backward-design techniques, an evaluation and feedback instrument (prior to developing the actual PD). We tried this year to enhance our PD workshops by staying on theme at our September, December, March, and April dinner meetings, as well as to offer additional PD sessions in October (at the CSTA-CSSA Annual Science Conference) and in November (held at Wesleyan University). The sessions we planned for January and February ended up being cancelled due to weather predictions and low forecasted enrollments (thanks to our on-line rsvp responses). For every PD workshop that was held and for every one that was planned, there was a separate planning meeting, so a lot of time and effort have gone into our workshop series this year.

In This Issue:

As a member of the planning team, I can tell you that it was time well spent and a gratifying experience on my part. I hope that others have gotten as much out of it as we have tried to put into it. We would love your feedback (I sense another on-line survey heading your way!) as we begin to plan for next year.

Speaking of planning for next year, make some notes to yourself about budget. One of the 2011 fall regional NSTA conferences will be held in Hartford, so you'll want to build that into your budget and send as many teachers as you can. Please save the following dates for the remainder of this school year: April 24th is our next dinner meeting, and May 12th is our Annual CSTA-CSSA Awards Dinner at the New Haven Lawn Club.

CSSA is YOUR organization. Let us hear from you.

Pre-dinner professional development

The professional development subcommittee whose members include: Harry Rosvally, Melinda Meyer, Holly Harrick, Tammy Mockus, Marilyn Odell, and Sandy Justin will facilitate this afternoon's workshop.

About Tonight's Speaker

Joe Krajcik is a professor of Science Education in the School of Education at the University of Michigan and a member of the Center for Highly Interactive Computing in Education. His work during the past ten years has focused on working with teachers in science classrooms to bring about sustained change. Working closely with colleagues at Michigan, graduate students, and teachers, he has endeavored to create classrooms that focus on students collaborating to find solutions to important intellectual questions that subsume essential curriculum standards and use new technologies as productivity tools.

His goal is to create classrooms environments where students are actively doing the intellectual work. His working prediction is that such educational environments will help learners develop deep understanding of content as well as strategies for generating new understandings. As such, Dr. Krajick is interested in finding out what students learn in such environments. His interests also include exploring the challenges that teachers face in enacting such complex instruction. Dr. Krajick's work is collaborative in nature, involving close working relationships with science teachers and school systems.

Joe Krajcik's website: http://www-personal.umich.edu/~krajcik/

Are your students participating? We all recognize March for the start of the standardized testing season, but are your students taking advantage of some of the open inquiry opportunities also available? Those students who conduct authentic science research can present their results at the 2-day **Connecticut Junior Science and Humanities** Symposium (high school) at the University of Connecticut or the weeklong **Connecticut Science Fair** (Grades 7-12) at Quinnipiac University. Learn about these amazing opportunities at: www.ctjshs.uconn.edu and www.ctsciencefair.org

Editor's Corner: Options for Professional Growth Models

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Note: This article is cross-posted on my blog: http://problemfinding.labanca.net. Be a part of the discussion, join my personal learning network, and leave a comment on its contents there.

Many districts employ a professional growth model for their tenured faculty members for evaluation. Instead of a traditional clinical observation with post-observation follow-up, teachers can develop a project to improve their own teaching and learning. This performance-based approach to teacher development and school improvement allows teachers to take ownership of their growth and learning. Outcomes expected from a professional growth project might include:

- Empowering teachers to analyze and improve their own strengths and areas needing improvement
- Empowering teachers to adjust their teaching as compelled by internal desire, student needs, or societal demands
- Empowering teachers to engage in a search for relevant compasses to guide the thoughtful implementation of education of children.

Undoubtedly empowering teachers to improve should be linked to improved student achievement, which should be measured in many, various, authentic ways. In essence, growth models can allow teachers to conduct their own inquiry into a relevant, important topic that can improve their instruction.

As science educators, we subscribe to an inquiry philosophy for teaching and learning. Simply put, inquiry is learning by questioning and investigation. Underlying an effective inquiry program are philosophies associated with problem solving, reasoning, critical thinking, oral and written communication, and the active and reflective use of knowledge. Inquiry learning has the instructional goals of teaching scientific knowledge and processes of research, while nurturing a commitment to scientific inquiry, promoting open-mindedness with an ability to balance alternative perspectives, and a cooperative spirit and skill. If we ask our students to do it well, why not be leaders to them by example?

As science education leaders, we have the opportunity to empower our teacher to seek out inquiry professional growth opportunities to better develop their instructional potential. However, embedded in our responsibility is to develop the leadership potential in each one of our constituents. Teachers often have amazing skills, knowledge, and dispositions that they should be encouraged to share with others.

How do we empower our teachers to share? We can encourage them to include in their professional growth plans opportunities to share their knowledge with others as part of their end products with the Science Education Community:

- Presenting a workshop at a district or school professional development session
- Presenting a workshop at the Connecticut Science Teachers Association Annual Conference
- Writing an article for the *Connecticut Journal of Science Education or* the CSTA newsletter.
- Writing an article for a national journal: *The Science Teacher, The Journal of Chemistry Education, The American Biology Teacher, The Physics Teacher*

These are activities that many teachers would not consider doing on their own, but with gentle, supportive encouragement from a compassionate leader, they might. The courage to step beyond oneself, to take a risk and be willing to share is not always easy, but we do our profession a disservice when great ideas exist and they are not shared on a larger stage.

We ask our students to share their work in authentic settings. Perhaps it's time we evaluate ourselves and our colleagues as life-long learners and ask if we collectively are willing to take the risks that we expect from our students: to develop our own inquiry skills, leadership, and innovation and have a willingness to share with an authentic audience who would find value – our own peers.

Safe Science: Be Protected!

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Dealing with hazardous chemicals!

I. INTRODUCTION:

Exposure for science teachers and students to chemicals in the air, water, food, etc., can be hazardous to their health. Science teachers need to be ever vigilant on this issue relative to short and long-term exposure ramifications in the laboratory. Remember that students move on each year, the teacher stays, repeating the chemical exposure!

Is there a safe limit? How much is too much? How can the dangers of exposure be assessed? How can a teacher protect themselves and their students? Best professional practice and legal standards require these kinds of questions to be considered and addressed by the employer and employees.

II. LEANING ON COSHH?

The United Kingdom's Health and Safety Executive addresses the dangers of using hazardous chemicals in the workplace in their publication titled *Working with substances hazardous to health: What you need to know about COSHH!* COSHH stands for Control of Substances Hazardous to Health Regulations 2002. This concise and well designed leaflet provides basic but critical information which science teachers will find useful in helping to make their laboratories a safer place to work.

The first suggestion is to determine which substances can be harmful. Its suggest checking out four different sources including:

1. Securing and reviewing the safety data sheet.
2. Securing additional information from your chemical supplier and/or professional association.
3. Look into the professional publications for health and safety information.
4. Check out Internet professional, business and government resources.

Next, think about how the hazardous chemical is to be used and what the employee's exposure is going to be. For example the publication suggests:

1. Breathing in vapors, mist, dust, etc. – exposure to nose, throat or lungs, liver, etc.
2. Exposure to skin by splashing, dipping, airborne dust.
3. Imbibing – exposure to chemicals by fingers in the mouth, eating, etc.
4. Exposure to eyes – vapor, dust, gases, splashes, etc.
5. Puncture of skin – needlestick, cuts, etc.

Review the safety data sheet or material safety data sheet for critical safety information in dealing with hazardous chemicals. Labeling on bottles and packages is required, including safety symbols. International symbols will replace current symbols used in most countries during the next few years. A sample of soon to be adopted international safety symbols include the figures on the right:

Risk assessment is the next recommended step. Employers usually are required to assess the risk to their employees. Once done, they are then required to provide engineering controls, standard operating procedures and personal protective equipment to prevent or adequately control the risks for employees.

How do you choose the correct control measure to meet the challenge of the hazards? The following measures are recommended in the publication in order of priority (Pg 5):

1. Eliminate the use of a harmful product or substance and use a safer one.
2. Use a safer form of the product, e.g. paste rather than powder.
3. Change the process to emit less of the substance.
4. Enclose the process so that the product does not escape.
5. Extract emissions of the substance near the source.
6. Have as few workers in harm's way as possible.
7. Provide personal protective equipment (PPE) such as gloves, coveralls and a respirator. PPE must fit the wearer.

Also included is the "Checklist for good control practice" (Pg 6)

1. Do you design and run your processes to keep the spread of contaminants as low as possible?
2. Do you think about all routes of exposure – breathing in, on skin or swallowing?
3. Do you choose control measures according to the amount of substance, how it gets into the body and how much harm it will cause?
4. Do you make sure that measures are effective, easy to use, and work properly?
5. Do you also need to issue personal protective equipment (PPE)?
6. Do you check regularly that measures continue to work, and keep simple records?
7. Do you tell workers about the dangers and how to use control measures properly?
8. Do you avoid increasing the overall health and safety risks when making changes?

In order to "keep it clean" – someone should be charged with the responsibility of making sure control measures are checked and maintained. In the United States, the Occupational Safety and Health Administration or OSHA requires schools in most states to have a Chemical Hygiene Officer who oversees chemical hygiene in all laboratories.

The CHHOS publication noted the need for a 'competent' person to (Pg 5):

1. Check that the process isn't emitting uncontrolled contaminants;
2. Check that the control equipment continues to work as it was designed;
3. Check that workers follow the right way of working.

Two areas which are stressed are the operation of engineering controls such as local exhaust ventilation and condition of personal protective equipment such as safety glasses and safety goggles.

Training and resources are also part of the operation in order to make sure employees are competent in dealing with chemicals hazards relative to safety precautions/prevention.

Training, instruction and information (Pg 7)

1. Explain to your workers, and anyone else who needs to know, what the dangers are. It is poor practice just to hand them a page of written information.
2. Show workers how to use control measures properly, and how to check that they are working.
3. Carry out practice drills for cleaning up spills safely – do this before any spillages happen.
4. If workers need to use respirators, they also need face fitting and training.
5. If they need to use protective gloves, they need to know how to put them on and take them off without contaminating their skin. See 'Find out more'.

In addition to training, employees are best kept healthy by monitoring exposures, providing information and health checks.

III. ISSUES FOR THE SCIENCE TEACHER?

The science teacher must consider several issues relative to use and exposure of hazardous chemicals in their school laboratories.

1. Long Term Exposure: Relatively low or high levels of exposure over the long term can have negative health ramifications. Teachers need to be vigilant in addressing protective actions such as having appropriate ventilation in the lab, referring to SDS or MSDS information and using personal protective equipment.
2. When Unsure – Request the Test: HSE, OSHA and other government standards usually provide the right of the employee to be tested if exposure levels to hazardous chemicals are in question. When unsure, request that your employer have the worksite tested by a licensed industrial hygienist.

3. Pregnancy: Both female employees and students may be pregnant. Consult the SDS or MSDS for information and cautions relative to reproductive toxins, harm to the fetus, and other relevant concerns.
4. Opt for Less of the Two Evils: Always look for the less or least chemically hazardous material in doing laboratory work.

LIVE LONG AND PROSPER SAFELY!

Reference:

http://www.hse.gov.uk/pubns/indg136.pdf - Health and Safety Executive, United Kingdom - *Working with substances hazardous to health: What you need to know about COSHH*

Resources:

http://www.iosh.co.uk. - Institution of Occupational Safety and Health (IOSH). The Grange, Highfield Drive, Wigston, Leicestershire LE18 1NN. Tel: 0116 257 3100

http://www.OSHA.gov – Occupation Safety and Health Administration

News Briefs:

OBAMA WANTS TO CONSOLIDATE CURRICULUM PROGRAMS

States and districts would have to compete for grants from three funds.

Excerpted from: Education Week: Erik W. Robelen

As part of a budget plan designed to reshape federal support for education, President Barack Obama is seeking to consolidate more than a dozen discrete programs into three broader, competitive funds focused on "effective teaching and learning" across the academic-content areas.

The proposal emphasizes literacy, the STEM fields of science, technology, engineering, and mathematics, and a final catchall category dubbed a "well-rounded education."

But elements of that approach are facing stiff resistance from an array of organizations as well as from Democratic and Republican lawmakers. A chief concern is that the consolidation would lead to the neglect of issues Congress has long identified as national priorities, such as teaching U.S. history, boosting arts education, and distributing books to needy children.

President Obama last month unveiled his budget request for fiscal 2011, which begins Oct. 1. In all, he would raise discretionary spending at the Education Department to about $50 billion, an increase of approximately 7.5 percent. That would include at least a $3 billion increase for K-12 programs. Nearly 40 existing programs at the federal agency would be consolidated into broader, more flexible funding streams.

ADVANCING SCHOOL REFORM IN AN ERA OF FISCAL CRISIS CONNECTICUT BEGINS THREE INITIATIVES

Excerpted from: Connecticut State Department of Education: Tom Murphy

The Connecticut Department of Education and several school districts around the state are engaged in comprehensive educational reform—despite the scarcity of state and local funding—that will keep Connecticut students at the forefront of academic achievement.

The Department is focused on three new initiatives that will improve student achievement in the state:
Connecticut is in the process of completing and is submitting its application for $175 million in federal Race to the Top funding that will fund several statewide programs and local district initiatives over the next four years.

Connecticut has joined forces with four other New England states as a member of the New England Secondary School Consortium (NESSC), an ambitious initiative that is promoting high school innovation, best practices, and forward-thinking educational policy across the region.
Connecticut will take part in the national Common Core State Standards Initiative, which will raise academic standards and help Connecticut students to successfully compete with students from other states and from other countries.

"We have an obligation to Connecticut's students to provide the best possible educational experience that will prepare them to compete in the world economy. Although we are struggling with state and local fiscal crises, we also cannot afford to defer our efforts to reform and improve our educational system," said state education Commissioner Mark K. McQuillan can no longer rest on its laurels when it comes to student achievement.". "What has become clear to us is that other states and other nations have done more to move their reform agendas and that Connecticut."

Special thanks to tonight's sponsor:

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Connecticut Science Center

Connecticut Science Center Professional Development Opportunity

Two- Day Field Trip Educator Workshop: Light

April 10 & 17, 8:30 AM – 3:00 PM

For the first time ever, we are offering a professional development field trip workshop during the school year to be held here at the CT Science Center. This workshop will help educators with the following CT standard: **5.1 Light.** Click here [http://ctsciencecenter.org/educate/Field-Trip-Workshops.aspx] for more information and to register.

PLEASE NOTE: This is a two-day workshop which will occur on two consecutive Saturdays.

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