

# Connecticut Science Supervisors Association



**Newsletter**  
**March 2009**  
**Volume XVIII**  
**Number 3**

## President's Message

In my current employment as an AP Science consultant, I get to see many Connecticut high schools and talk to numerous science teachers across the State. It is encouraging to me to meet so many hard working and dedicated science teachers whose primary goal is to help their students to learn about science. If my experiences are typical, and I have no reason to doubt that they are not, the high school students in our State are very fortunate to be able to interact with some outstanding teachers. But, in this time of distressed budgets and impending cuts, let us remember the reason for whom we continue to labor. Even if it is under less than perfect conditions, I know that you will rise to the challenge, as you have in the past, and continue to make excellent education the standard in Connecticut. Dr. Haim Ginott has summed it up: "Teachers are expected to reach unattainable goals with inadequate tools. The miracle is that at times they accomplish this impossible task."

Let's go do the impossible.

-Bruce Faitsch, President, CT Science Supervisors

## Pre-Dinner December Workshop: Elizabeth Buttner

CSDE K-8 Science Consultant Liz Buttner will provide an overview of the newly-introduced Science Curriculum Standards Including Grade-Level Expectations, how they relate to curriculum development, to classroom instruction and to state assessments. Liz will also highlight the recent revisions made to the draft GLEs and will review CMT score reporting and 2008 results.

Information on the draft GLEs can be found at:

[http://www.sde.ct.gov/sde/lib/sde/pdf/curriculum/science/pk-8\\_sciencecurriculumstandards8-08.pdf](http://www.sde.ct.gov/sde/lib/sde/pdf/curriculum/science/pk-8_sciencecurriculumstandards8-08.pdf)

Make sure to also look at the CT State Dept Ed Science Page at:

<http://www.sde.ct.gov/sde/cwp/view.asp?a=2618&q=320890>

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# December Dinner Speaker: Paul Hewitt

**Keynote Presentation: Paul Hewitt, noted author of Conceptual Physics**

**Topic : Some Simple Rules for Success in the Science Classroom**

**Mr. Hewitt: “Much of what I learned about teaching was from negative examples I saw when I was a student. I will discuss ways that you can make 'lemonade from lemons'.”**

**Paul G. Hewitt was a Silver Medalist flyweight Boxing Champion for New England States at the age of 17. He was then a cartoonist, sign painter, and uranium prospector before beginning his physics studies. Conceptual Physics was first published in 1971, while Hewitt was pioneering the conceptual approach to teaching at City College of San Francisco, with guest spots at the University of California at both the Berkeley and Santa Cruz campuses,**

**and the University of Hawaii at both the Manoa and Hilo campuses. He also taught his physics course for 20 years at the Exploratorium in San Francisco, which honored him with its Lifetime Achievement Award in 2000. His books are translated in 12 languages and used worldwide.**



## March Sponsors

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## SAVE THE DATES

**March 4**, Wednesday, CSSA Dinner Meeting,  
5:30 PM, 4 Points Hotel, Meriden,  
Speaker Paul Hewitt

**April 8** Wednesday, CSSA Board of Directors Meeting

**April 29**, Wednesday Joint CSSA/CSTA Awards dinner, New Haven Lawn Club, 6:00 PM

**May 13**, Wednesday, CSSA Annual Membership/Dinner Meeting,  
5:30 PM. 4 Points Hotel, Meriden,

**June 3**, Wednesday, CSSA Board of Directors Meeting

## CSSA Positions

**Did you know? CT Science Supervisors Association is an organization that not only promotes professional development, dinner meetings, and awards, but also advocates for science education in Connecticut. Many members serve on state committees, work with government officials, and collaborate with other organizations to forward the cause of science education. Position papers on topics such as: Middle School Science, Safety in the Science Classroom, The Role of the Science Supervisor, and Elementary Science in the Classroom can be found at <http://www.cssaonline.net/cssapositionpapers.htm>**

**In March of last year, CSSA drafted a position on some of the secondary school reform initiatives being proposed. Past President Fred Myers is one of several science educators that will serve on a statewide panel examining science in high school reform, and welcomes your feedback. Here is a summary of that position:**

### **CSSA Position Statement: High School Science Reform Draft – March, 2008**

It is vital that our children learn science. An understanding of science provides them with increased opportunities for careers, with skills in problem solving and decision-making, with increased understanding of the world around them, and with personal satisfaction. An improvement in science education in Connecticut will, in the long run, help ensure our economic vitality, technological growth, and national security.

Children, teenagers, and adults learn science most effectively by doing science, not by reading about science or watching science. One cannot become a good tennis player by learning about the game or even by watching others play. Rather, you become a good tennis player by repeated participation in the game. The same is true with learning science: students need to be full participants in the scientific methods of inquiry to truly learn the real nature of science. For science education to be effective, students must actively participate in experimentation and investigations on a frequent basis. It is then, and only then, that students master science concepts and begin to appreciate the power, beauty, and awe of science.

High school science education is not an island. The formal foundations of high school science education must begin in Kindergarten, and build as students progress through the grade levels. Furthermore, science can be integrated and learned through other avenues, including language arts, mathematics, social studies, and health.

Statewide reform in high school science education is, indeed, a daunting undertaking. The CSSA has kept in mind the existing structure and has attempted to make reasonable, practical recommendations to help propel our students toward high-quality, 21st century science education. The CSSA's recommendations that follow strive to balance realism and idealism.

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**(Some specific recommendations are detailed in the statement)**  
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The time is right for change, and the CSSA is eager to play a role in that change. Science education remains vital to our economy and welfare as well as to many ethical and global issues. Science education will have a significant impact on our future. The CSSA looks forward to partnering in any way possible with the Connecticut State Department of Education in moving science education forward.

## **SAFE SCIENCE: BE PROTECTED!**

By Dr. Ken Roy

Director of Environmental Health & Safety, Glastonbury Public Schools, Glastonbury, CT 06033-3099;

Safety Compliance Consultant, NSTA, NSELA, ICASEcFax 860-652-7275, Email: Royk@glastonburyus.org

### **GETTING A GRIP SAFETY-WISE!**

#### **I. Safety Quiz!**

Laboratory accidents involving hands can usually be classified under four main hazard types: abrasions, chemicals, cutting and heat. One glove does not fit all however!

Hand protection can be as critical in the laboratory or field when it comes to personal protective equipment use. OK – Let's see what the reader knows about PPE hand protection!

- a. *OSHA does not have a standard that directly addresses hand protection? T or F?*
- b. *Rubber gloves protect lab workers from all chemicals? T or F?*
- c. *MSDS's address the type of glove needed for a specific chemical? T or F?*
- d. *No other glove type should be used unless someone is allergic to rubber or latex? T or F?*
- e. *A small tear in the cuff of a glove will not compromise its use? T or F?*

The answers are found in this article on hand protection in the laboratory so let's see how well you did.

#### **II. OSHA's Says!**

The Occupational Safety & Health Administration directly addresses personal protective equipment (PPE) for hands under 29CFR 1910.138(a) – Hand Protection. The general requirements state that employers must select and require employees to use appropriate hand protection when employees' hands are exposed to hazards such as those from skin absorption of harmful substances; severe cuts or lacerations; severe abrasions; punctures; chemical burns; thermal burns; and harmful temperature extremes. The standard further states that employers shall base the selection of the appropriate hand protection on an evaluation of the performance characteristics of the hand protection relative to the task(s) to be performed, conditions present, duration of use, and the hazards and potential hazards identified. Basically, the employer must do a safety assessment to determine what issues must be addressed and how they are to be rectified relative to hand protection.

Additional reference to PPE are noted in the Hazard Communications Standard (29CFR 1910.1200) and the Laboratory Standard (29CFR 1910.1450). HazCom address PPE when working with hazardous chemicals. The Lab Standard requires standard operating procedures when working with hazardous chemicals, including PPE.

#### **III. What Are The Important Hand PPE Questions?**

The general OSHA requirements for PPE (29 CFR 1910.132) include the performance of a written hazard assessment, selection of the appropriate PPE to protect the employee and proper training and records noting appropriate employees have been trained. Five important questions science teachers should be asking are as follows relative to hand protection:

- a. *When is it necessary to use hand PPE?*
- b. *What type of hand PPE is necessary?*
- c. *How is hand PPE properly put on, worn, adjusted and removed?*
- d. *What are the limitations of the hand PPE?*
- e. *What is the appropriate care, life span, maintenance and disposal of hand PPE?*

#### **IV. What Kind of Exposures Warrant Hand PPE?**

Hand PPE using gloves are to be used if there is the potential for the following exposure to laboratory hazards:

- a. Abrasions – Appropriate leather or heavy cotton knit gloves are required in cases where abrasive materials or abrasive producing tools/equipment are used.
- b. Cuts & Lacerations – Appropriate cut resistant gloves are required in cases where sharp objects are being used.
- c. Electrical Shock – Appropriate rubber insulated gloves and leather glove protectors are required to protect employees from prescribed voltages.
- d. Hazardous substances – Appropriate chemical resistant gloves are required to prevent chemical contact and skin absorption.
- e. Temperature Extremes – Appropriate thermal protection via insulated gloves are required.

General types of hand protection include the following:

1. Metal mesh gloves - resist sharp edges and prevent cuts
2. Leather gloves - shield your hands from rough surfaces
3. Vinyl and neoprene gloves - protect your hands against toxic chemicals
4. Rubber gloves - protect you when working around electricity
5. Padded cloth gloves - protect your hands from sharp edges, slivers, dirt, and vibration
6. Heat resistant gloves - protect your hands from heat and flames
7. Latex disposable gloves - used to protect your hands from germs and bacteria
8. Lead-lined gloves - used to protect your hands from radiation sources

#### V. **MSDS Information Critical!**

OSHA required MSDS information must include appropriate PPE for each hazardous chemical. The MSDS section on PPE addresses not only hand protection but also may address other forms of PPE such as eye, face, body, respiratory, etc. An example is the MSDS for Hydrochloric Acid. It reads as follows:

##### **Personal Protection for HCl:**

***“Personal Respirators (NIOSH Approved):*** *If the exposure limit is exceeded, a full facepiece respirator with an acid gas cartridge may be worn up to 50 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. WARNING: Air purifying respirators do not protect workers in oxygen-deficient atmospheres.*

***Skin Protection:*** *Rubber or neoprene gloves and additional protection including impervious boots, apron, or coveralls, as needed in areas of unusual exposure to prevent skin contact.*

***Eye Protection:*** *Use chemical safety splash goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.”*

In this case, skin protection includes rubber or neoprene gloves, plus other equipment to protect the body relative to skin contact.

#### VI. **Chemical Hazards: Special Attention for Hand Protection!**

The type of glove protection used in the laboratory is first determined by the nature of the substances involved. Commercial labeling on the container and MSDSs should be viewed prior to working with any hazardous chemical. Most often, glove type is provided for that specific hazardous chemical, as well as additional PPE. Over time, all gloves will be permeated by the chemical. Try to determine the gloves characteristics relative to life span such as thickness and permeation rate. Gloves should have a scheduled replacement date which depends on how often they are used and the permeability to the substance(s) handled. Gloves being taken out of service should be cleaned of the contaminate and then appropriately discarded.

#### VII. **Getting Off The Gloves!**

The Centers for Disease Control and Protection or CDC provides the following guidance in removing gloves: *To take off your gloves when you're done working, peel one glove off by holding the cuff. Then, with your ungloved hand, hold it wrong-side out as you peel off the other glove by the cuff. When you're finished, both gloves will be wrong-side out and the contaminated surface will be on the inside*

VIII. **FINAL THOUGHTS!** In summary, consider the following items when the need for hand PPE is there:

- ◆ Make sure the glove size fits and is comfortable.
- ◆ Remove jewelry such as watches, rings that can puncture gloves.
- ◆ Always inspect gloves before putting them on and when using them for signs of deterioration, holes, cuts, tears, etc.
- ◆ Always replace worn or damaged gloves.
- ◆ When the work is completed, make sure the gloves are disposed of in the correct waste container.
- ◆ Always wash hands with soap and water before and after glove use.

PS: *Answers in case any were missed! 1. F, 2. F, 3. T, 4. F, 5. F*

#### ***Live Long & Prosper Safely!***

Resources:

International Labor Organization (GHS Draft): <http://www.ilo.org/public/english/protection/safework/ghs/ghsfinal/>  
Occupation Safety & Health Administration: <http://www.osha.gov/dsg/hazcom/ghs.html>

## LEGISLATIVE UPDATE

-Richard Therrien

Following are some of the bills and initiatives proposed to the CT State Legislature that may have some impact on science education. Not all bills will have a hearing, and interested parties should continue to check the website at: <http://www.cga.ct.gov/2009/eddata/cbr/ED.htm> for the current status of each bill. (The web version of this newsletter has links)

### **Raised Bills With Public Hearing Held Feb 23, 2009**

-R.S.B. No. 947 AN ACT CONCERNING HIGH SCHOOL CREDIT FOR APPROVED ONLINE COURSEWORK. To require local and regional boards of education to adopt policies for the approval of online coursework that high school students may take for credit towards high school graduation requirements.

R.H.B. No 6494 AN ACT CONCERNING TEEN DATING VIOLENCE EDUCATION. To protect the safety of teens by educating them about the dangers of dating violence. (through high school health)

### **Governor's Bills**

H.B. No. 6370 AN ACT CONCERNING A MIDDLE COLLEGE SYSTEM. To establish the Middle College System by consolidating the regional vocational-technical high schools with the community-technical colleges.

S.B. No. 830 AN ACT CONCERNING THE GOVERNOR'S RECOMMENDATIONS REGARDING EDUCATION. To implement the Governor's budget recommendations. (impacts funding, magnet schools, bilingual, school readiness, priority schools, charter schools, Early Childhood, and other agencies)

### **Raised to Education Committee**

-R.S.B. No. 944 AN ACT CONCERNING A PLAN FOR ACADEMIC AND PERSONAL SUCCESS FOR EVERY MIDDLE AND HIGH SCHOOL STUDENT. To provide for the phasing in of the voluntary implementation of "The Connecticut Plan: Academic and Personal Success for Every Middle and High School Student" adopted by the State Board of Education on October 2, 2008, which significantly changes the requirements for the awarding of high school diplomas. (See last CSSA newsletter for summary) Also refer to the CSSA Position on High School Reform: <http://www.cssaonline.net/CSSAPositionStatementHSScience.pdf>

-R. S.B. No. 939 AN ACT CONCERNING EDUCATOR CERTIFICATION. To revise the certification and professional development requirements for educators.

-R.S.B. No. 6571 AN ACT CONCERNING SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS ISSUES IN CONNECTICUT. To authorize the Connecticut Academy for Education in Mathematics, Science and Technology to serve as an impartial convening agent for education issues relating to science, technology, engineering and mathematics in Connecticut.

### **Other Proposed Bills of Possible Interest to Science Education (not yet raised)**

P.H.B. 5708 AN ACT PROHIBITING THE PRACTICE OF DISSECTION IN THE CLASSROOM. To prohibit the use of dissection in the classroom.

P.S.B. No 467 AN ACT CONCERNING THE WAIVER OF CERTAIN TEACHER CERTIFICATION REQUIREMENTS. To allow those applicants for teacher certification participating in an alternate route to certification program to receive a waiver from the requirement that their bachelor's degree be in a closely related field if they have received a sufficiently high score on Praxis II.

P.H.B. 5710 AN ACT CONCERNING RECIPROCITY FOR TEACHERS. To allow new teachers who have certification from other states who have already passed testing requirements in that state, to be issued a special initial or provisional educator certificate without a testing deferral.

P.H.B 5715 AN ACT ESTABLISHING A RECIPROCITY CERTIFICATION PROGRAM FOR TEACHERS AND ADMINISTRATORS. To allow Connecticut to expand its educational workforce

What's the role of science education in preparing students for the future? Lately, as K-12 Science Supervisor for one of the state's three largest cities, I have had to struggle with this question and issue. Urban science education in communities that have student populations of over 80% minority and impoverished is different in some ways, but all science educators face similar challenges and issues. It is especially unique in a state such as Connecticut, in which there are 169 towns, and a state that has the largest achievement gap in the nation.

([/www.conncan.org/matriarch/documents/2007\\_NAEP\\_Gap\\_Tables.pdf](http://www.conncan.org/matriarch/documents/2007_NAEP_Gap_Tables.pdf)) 36% of Connecticut public school students are minorities, yet over 40% are enrolled in five cities. . The 4 year graduation rate in the three major cities continues to hover near the 50% mark.

Elementary and middle school students took state science tests for the first time this year, performing worse than in reading, writing and math. Only 55.2 percent of fifth graders met the state goal in science, while an average of 64.3 percent met goal in other subjects. Poor, African-American and Hispanic fifth graders performed particularly poorly on the science test, averaging 12.9 points lower than in reading, writing, and math. Cities struggled the most on science tests in 2008. In Connecticut's five largest school districts, both fifth and eighth grade science scores were much lower than the state average. The gap between science scores and other subject scores was larger in those big districts as well. Only 25.1 percent of fifth graders met the state goal in science in the five largest districts, an average that is 12.9 points lower than their average in other subjects and 30.1 points below the state average. In eighth grade, results were similar: 25.4 percent of students met the state goal, with an 8.9 point gap between science and other subjects. Eighth graders in the five largest districts scored 33.5 points below the state average at goal in science. I'm proud of the science achievements of the over 20,000 students I supervise, but am worried about what these results show. So how to prepare Connecticut students, including urban populations, for a 21st century world?

First of all what is our goal? If we are preparing students for a world in the future, what kind of careers and jobs will they have? The Report "The State of Connecticut 2008: Job Trends and The Labor Force" offers some ideas. <http://www.ctkidslink.org/publications/econ08sowctjobs.pdf>. Here are some key trends: Connecticut continues to shed manufacturing jobs and add health and education jobs. Connecticut's labor force is highly educated (currently 9% have less than a high school education). Yet, for those workers without at least some post high school study, it is more likely that they will have a higher rate of unemployment. In addition, for those of us working in the cities, our minority population currently has a rate of unemployment at least twice that of whites. The State of Connecticut Department of Labor, as well as the Department of Economic and Community Development has made projections out to the year 2016 of the fastest growing professions, both in percentage growth, and in total numbers. In Connecticut, health professions, such as nurses, nurse assistants and health technicians, are among the top professions as well as computer technicians, and environmental technicians. Many of these fast growing careers do not require a bachelor's degree, but some other specialized training. The proposal to combine votech schools and community colleges is partly aimed at preparing students for these green technologies and health care professions

Science supervisors have always known of the need for preparing students for science careers. Last year, CSSA heard presentations on the narrowing pipeline, and that our science and math PhDs in this country were increasingly being awarded to foreign students. We have also heard statistics about our science scores in comparison to other countries. Yet, in the push to prepare students to become scientists, we need to not lose sight of the need to prepare ALL students for scientific literacy. We need to offer accessible and meaningful courses in our high schools for students who may not be majoring in science in college, or even attending a four-year college. Those students deserve to be taught how science, technology, engineering, and mathematics fit into their life and their possible career. We need to have teachers that are willing and able to teach and reach all students when it comes to science. Our curriculum needs to reflect the needs of our business, technical, and career

### CONNECTICUT SCIENCE CONNECTION NEWSLETTER

The CSC is distributed electronically biweekly to CT Points of Contacts and Key Leaders through the NSTA Building A Presence Program. The latest edition has 11 pages of professional development and science teaching information. Check it out at <http://www.cssaonline.net/CSC/CSCFeb25.pdf>

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