



## At PPPL THIS WEEK

MONDAY, OCTOBER 31



WEDNESDAY, NOVEMBER 2

### GFDL Events and Seminars

Noon - 1 p.m. ♦ GFDL  
Smagorinsky Seminar Room

The Rapid Warming of the North Atlantic in the Mid 1990s: Mechanisms and Prediction

Jonathan Robson (Univ. of Reading)

[www.gfdl.noaa.gov/events](http://www.gfdl.noaa.gov/events)

(Gov't, Univ. or 2 other forms of I.D. needed)

### PPPL Colloquium

4:15 p.m. ♦ MBG Auditorium

Distributed Solar Photovoltaic Power Production - Technology and Benefits

John Hearon and Rick Stuby  
(PSE&G and Petra Solar)

[CLICK HERE FOR ABSTRACT](#)

THURSDAY, NOVEMBER 3

### MacLean House Lecture

3 p.m. - 4 p.m.  
120 Lewis Library, Princeton University

An Overview of Nuclear Fusion and Its Technology

Charles E. Kessel, Jr. (PPPL)

FRIDAY, NOVEMBER 4

### DIID-D Science Meeting

1 p.m. - 2:30 p.m. ♦ B-233



## Goldston and Kessel to Speak About Fusion Power

by Patti Wieser

**R**ob Goldston and Charles Kessel, senior researchers at PPPL, are featured speakers in the "The Future of Nuclear Power" series at Princeton University.

Kessel, a principal engineer at PPPL, will provide "An Overview of Nuclear Fusion and Its Technology" on Thursday, November 3, at 3 p.m. at 120 Lewis Library on the University's main campus.

"My talk will cover some basics of fusion physics and our present view of the technology requirements for a fusion power plant," said Kessel. "This will include some discussion of the safety and environment issues of fusion."

Kessel is a pioneer in the field of plasma engineering and simulation. His research interests are integrated simulations of tokamak plasmas, plasma equilibrium and stability, advanced tokamak physics, and the integration of engineering and physics in tokamak design. A tokamak is a configuration of an experimental fusion machine. Plasma is a hot, electrically charged gas used as the fuel to produce fusion energy. Kessel received a Ph.D. in fusion engineering and applied plasma physics from the University of California, Los Angeles, in 1987, joining the Laboratory the same year.

*continued on page 2*



Rob Goldston



Charles Kessel

## PPPL Receives Energy Secretary's Achievement Award

by Patti Wieser

**O**n October 27, Energy Secretary Steven Chu recognized the Fugitive Emissions Working Group (FEWG) — which includes PPPL — with the Secretary's Achievement Award, the Department's highest non-monetary honor for a group or team effort.

Uniting more than 20 DOE laboratories, power administrations, National Nuclear Security Administration facilities, and program offices, the Working Group has eliminated nearly half of DOE's emissions of the most potent greenhouse gases (GHG) known. Leveraging science, technology, and managerial know-how, this campaign has prevented release of more than 600,000 metric tons of CO<sub>2</sub> equivalent since 2009.

PPPL earned a place on the Working Group by significantly cutting greenhouse gas emissions from sulfur hexafluoride, a gas used to insulate electrical equipment. Scrutinizing emissions with microscopic detail, PPPL researchers were able to pinpoint tiny leaks from the gas, also known as SF<sub>6</sub>. By stopping these leaks, PPPL trimmed GHG emissions by 32 percent, environmentally achieving the equivalent of taking 315 commuters off the road for a year.

*continued on page 2*

## Talks

continued from page 1

Goldston, Professor of Astrophysical Sciences, Affiliated Faculty with the Princeton Program on Science and Global Security, and former Director of PPPL, will discuss, "Climate Change, Nuclear Power and Nuclear Proliferation: Magnitude Matters" on Thursday, November 10, at 3 p.m. at 101 McCormick Hall on the University's main campus.

"Since I stepped down as PPPL Director I have both returned to plasma research, studying the physics of the plasma edge, and become involved with Princeton's Program in Science and Global Security (PSGS)," Goldston said.

By teaching an undergraduate course on fission and fusion, and working with PSGS, he said he has learned a great deal about the complex issues of nuclear proliferation. "Along the way I was surprised to find out that no one had tried to measure, in any quantitative sense, the benefits of nuclear power in mitigating climate change against its proliferation risks,"

Goldston said. "My analysis indicates, roughly, that if you use fast-spectrum fission reactors to reduce projected global warming by two-thirds of a degree Centigrade, there will be 1 million weapons' worth of plutonium sitting around at reactors around the world, ready to be next year's fuel... or something else. I conclude that it will be a very good thing when we make fusion a competitive energy source."

The talks are part of the Fall 2011 Maclean House Lecture Series featuring faculty and scientists from Princeton University and PPPL. Focusing on nuclear energy as a power source, the series explores the technologies and future prospects of nuclear fission and nuclear fusion. Lectures are free and open to the public. The Kessel and Goldston talks will conclude the fall series. To learn more, visit Princeton Alumni Education at <http://alumni.princeton.edu/learn-travel/events/macleanhouse/>. ■

## Award

continued from page 1

"The employees recognized today have gone above and beyond the call of duty, demonstrating an exceptional commitment to public service," said Energy Secretary Chu. "Their dedication, knowledge and skills have served to strengthen our nation's economic and energy security and the work of the Energy Department."

The Laboratory uses sulfur hexafluoride to insulate high-voltage, electrical equipment such as power supplies and heating systems for fusion experiments. Sulfur hexafluoride, a potent greenhouse gas, is non-toxic, requires no permit to use, and presents no hazard to people when properly handled. In 2009, a PPPL team led by Tim Stevenson developed and implemented a plan to reduce SF<sub>6</sub> loss at PPPL. The objective: To reclaim, recover and reuse SF<sub>6</sub> as much as possible. "We looked at the systems and equipment valve by valve, fitting by fitting, to find chronic, low-level leaks," said Stevenson, Head of Experimental Heating Systems at the Laboratory. "This was a major effort since it involved hundreds and hundreds of valves and fittings."

The electric power industry uses about two-thirds of all SF<sub>6</sub> produced globally. Electricity powers all PPPL experiments. Since SF<sub>6</sub> is used as an insulator for the neutral beam and radiofrequency high-voltage supplies, its emissions represent the single largest identified source of greenhouse gas emissions from Laboratory operations. Neutral beams and radiofrequency power are used to heat plasma — a hot gas of charged particles and the fuel for fusion energy production — in fusion experiments. "This is a clear example of the contractors, including Princeton, and DOE working together to reduce waste, reduce our collective greenhouse gas emissions, and pursue a more sustainable complex. We are very proud of Tim's efforts in leading this group," said Adam Cohen, PPPL Deputy Director for Operations.



**Tim Stevenson takes inventory of SF<sub>6</sub> levels at a power supply tank for one of PPPL's experiments.**

The FEWG is now working to reduce emission rates even further in the next two years. By driving down fugitive emissions, DOE is on track to achieve one-third of its 28 percent GHG reduction goal commitment at very low cost.

Representatives of 10 sites that played a leadership role in eliminating fugitive emissions were recognized, along with a member of the Office of Health, Safety, and Security. Rob Sheneman, Deputy Head, Environment, Safety, Health & Security at PPPL, attended the ceremony. PPPL Working Group members are Stevenson, Keith Rule and John Lacenere.

FEWG Chair Josh Silverman commented on the special role the Working Group plays for DOE. "When we began assessing fugitive emissions within the Department, we were shocked by how much these potent gases expand DOE's carbon footprint. In just two years, thanks to the initiative and efforts of FEWG participants, fugitive emissions turned from a major environmental challenge into a DOE climate change success story. As a result, the Department of Energy is reducing its greenhouse gas footprint, years ahead of schedule, by aggressively controlling its fugitive emissions." ■

# 2011 United Way Campaign PPPL KICKOFF

## Thursday, November 10

1:30 P.M. - M.B. Gottlieb Auditorium

 **Presentations**  **Refreshments**  **Give-A-Ways** 

*Princeton University contributes an additional 15% for all gifts made through payroll deduction or 10% for all gifts made by cash or check.*

**LIVE UNITED™** 

*Submit your pledge cards on  
or before the kickoff meeting  
to participate in the raffle.*



PPPL and Princeton University UNITED WAY CAMPAIGN

November 9 to December 7

# Fire Prevention: Your Questions About Smoke Alarms



Every October, the Site Protection Division invites the Lab community to observe Fire Prevention Week with us. This year, despite some uncooperative weather, we were happy to share our knowledge and experience with our coworkers and their guests. We had fun demonstrating our personal protective equipment (PPE) and various tools, and inviting you to try your hand at putting out a fire!

A common theme throughout the entire day was questions about the smoke alarms in your home. Many of you were curious about how many you need, what is the best location in your home for installation, and how to install smoke alarms?

## Why Should I Have a Working Smoke Alarm?

A properly installed and maintained smoke alarm is the only thing in your home that can alert you and your family to a fire around the clock. A working smoke alarm acts as your family's guardian: it is constantly on alert, scanning the air for fire or smoke. According to the National Fire Protection Association, more than 66 percent of home fire deaths occur in homes without a working smoke alarm. A working smoke alarm significantly increases your chances of surviving a deadly home fire.

## What Types of Smoke Alarms are Available?

There are many different brands of smoke alarms available on the market, but they fall under two basic types: ionization and photoelectric.

It cannot be said definitively that one is better than the other, because ionization and photoelectric smoke alarms detect different types of fire, and no one can predict what type of fire might start in a home. Therefore, the Site Protection Division recommends that every home be equipped with both ionization AND photoelectric smoke alarms, OR dual sensor smoke alarms, which contain both ionization and photoelectric smoke sensors.

In addition to the basic types of alarms, there are alarms made for those with hearing disabilities: these alarms use strobe lights to alert those who are unable to hear standard smoke alarms when they sound.

## What Powers a Smoke Alarm?

Smoke alarms are powered by battery or are hardwired into the home's electrical system. If the alarm is powered by battery, it runs on either a disposable 9-volt battery or a non-replaceable 10-year lithium ("long-life") battery. A backup battery is usually present on hardwired alarms and may need to be replaced periodically. These batteries must be tested on a regular basis and, in most cases, should be replaced at least once each year (except for lithium batteries). See the Smoke Alarm Maintenance section for more information.

## Install Smoke Alarms in Key Areas of Your Home

Install smoke alarms on every level of your home, including the basement. Many fatal fires begin late at night or early in the morning, so the U.S. Fire Administration recommends

installing smoke alarms both inside and outside of sleeping areas. Since smoke and many deadly gases rise during a fire, installing your smoke alarms at the proper level will provide you with the earliest warning possible. Always follow the manufacturer's installation instructions. Hardwired smoke alarms should be installed by a qualified electrician.

## Smoke Alarm Maintenance

Is your smoke alarm still working? Smoke alarms must be maintained! A smoke alarm with a dead or missing battery is the same as having no smoke alarm at all.

A smoke alarm only works when it is properly installed and maintained. Depending on how your smoke alarm is powered (9-volt, 10-year lithium, or hardwired), you'll have to maintain it according to manufacturer's instructions. General guidelines for smoke alarm maintenance are below.

Smoke alarm powered by a 9-volt battery:

- Test the alarm monthly.
- Replace the batteries at least once per year. (An excellent tip would be to change the batteries when you change your clocks for Daylight Savings.)
- The entire smoke alarm unit should be replaced every 8-10 years.

Smoke alarm powered by a 10-year lithium (or "long life") battery:

- Test the alarm monthly.
- Since you cannot (and should not) replace the lithium battery, the entire smoke alarm unit should be replaced according to manufacturer's instructions.

A hardwired smoke alarm:

- Test the alarm monthly.
- The backup battery should be replaced once per year.
- The entire smoke alarm unit should be replaced every 8-10 years.

## Never Disable a Smoke Alarm

A smoke alarm is just doing its job when it sounds while you're cooking or taking a steamy shower — do NOT remove the battery. You should open a window or door and press the "hush" button, wave a towel at the alarm to clear the air, or move the entire alarm several feet away from the location. Disabling a smoke alarm or removing the battery can be a deadly mistake.

## Thank You

Thank you from all of us in the Emergency Services Unit for stopping by our Fire Prevention displays. We enjoyed sharing not only the literature and information for your home's fire safety, but demonstrating our protective gear and fire-fighting equipment to each of you. ■

— Provided by PPPL Site Protection

# COLLOQUIUM

DISTRIBUTED SOLAR PHOTOVOLTAIC POWER  
PRODUCTION - TECHNOLOGY AND BENEFITS

**JOHN HEARON AND RICK STUBY**  
(PSE&G and Petra Solar)

**Wednesday, November 2**  
**4:15 p.m. (Coffee/Tea at 4 p.m.)**  
**M.B. Gottlieb Auditorium, Lyman Spitzer Building**

PLEASE JOIN US IN A CELEBRATION  
OF  
THE LIFE OF  
**DOUGLAS CHARLES McCUNE**



**2:00 P.M.**  
**SATURDAY, NOVEMBER 5, 2011**  
**McCosh 50 (AUDITORIUM)**  
WITH RECEPTION TO FOLLOW  
AT THE  
**CARL FIELDS CENTER**  
**PRINCETON UNIVERSITY**

**PPPL**  
PPPL LOGO  
ROLLOUT  
PARTY

**COMING SOON**

**TUESDAY, NOVEMBER 8**  
**2 P.M. — LSB LOBBY**  
**EVERYONE IS INVITED**  
**REFRESHMENTS - SOUVENIRS**

**They're Here... TODAY!**

[www-local.pppl.gov/google-info/](http://www-local.pppl.gov/google-info/)

## PPPL CAFÉ MENU

**MONDAY, OCT. 31**



**Baked Ziti with a  
Garlic Knot**

**Grill: Buffalo Chicken Wrap**  
**Deli: Egg Salad BLT Wrap**

**SOUP DU JOUR: HOME-STYLE CHICKEN NOODLE**

**TUESDAY, NOV. 1**



**BBQ Pork Loin with  
Herbed Rice**

**Grill: Cajun Grilled Chicken Club**  
**Deli: Caprese Sandwich**

**SOUP DU JOUR: LOUISIANA SEAFOOD CHOWDER**

MENU SUBJECT TO CHANGE WITHOUT NOTICE

**WEDNESDAY, NOV. 2**



**Build Your Chicken Burrito  
with All the Toppings**

**Grill: Meat Lovers Pizza Quesadilla**  
**Deli: Ranchero Roast Turkey Rollup**

**SOUP DU JOUR: ZUPPA TUSCANA**

**THURSDAY, NOV. 3**



**Chicken Fettuccini  
Florentine**

**Grill: CA Chicken Cheesesteak**  
**Deli: Corned Beef and Swiss+**

**SOUP DU JOUR: CREAM OF TURKEY**

**FRIDAY, NOV. 4**



**Roasted Chicken Breast  
with Garlic Wedges**

**Grill: Southwestern Burger**  
**Deli: Roadhouse Roast Beef Wrap**

**SOUP DU JOUR: CREAM OF TOMATO BISQUE**

[CLICK HERE FOR FULL WEEKLY MENU](#)

## WEEKLY

Editor: **Patti Wieser** ♦ Copy Editor /Graphic Design: **Gregory Czechowicz**  
Photography: **Elle Starkman** ♦ Web: **Chris Cane**

PPPL WEEKLY is published by the **PPPL Office of Communications** on Mondays throughout the year except for holidays.  
Deadline for calendar item submissions is noon on Thursday. Other stories should be submitted no later than noon on Wednesday.  
Send to: [pwieser@pppl.gov](mailto:pwieser@pppl.gov) ♦ Comments: [commteam@pppl.gov](mailto:commteam@pppl.gov)

PPPL WEEKLY is archived on the web at: <http://www.pppl.gov/ppplweekly.cfm>