ARSON HOTLINE

March 25, 2011

PRESIDENT'S MESSAGE

The theme for the articles in this newsletter is plastics.

As a reminder, WAIC has scholarships for attendees of the 2011 Wisconsin Chapter IAAI Spring Seminar (June 7-9). See details in this newsletter.

As previously announced, WAIC has been working on establishing an "Equipment Grant" Program to help offset fire investigation costs such as digging out a basement with heavy equipment. We have written the grant criteria and are working on the implementation and funding details. We are getting closer to announcing the start date for this program.

We also plan to update our Web site. Be patient with us until the update is completed.

As I write this message, we have had the first 60 degree days this year. It sure feels good. Let's hope the arson problem does not get really "hot" this summer.

Remember, WAIC's main purpose is to provide the **WISCONSIN ARSON HOTLINE (800-362-3005)** for an anonymous arson fire tip leading to the arrest and conviction of an arsonist.

William H. Schultz,
President
Wisconsin Arson Insurance Council

Printing and Publication of the Arson Hotline is provided by State Farm Insurance.
Editor – Paul Hansen (EFI Global, Inc.)

Wisconsin Arson Insurance Council
SEMINAR GRANT APPLICATION

For attending the 2011 Wisconsin Chapter IAAI Spring Seminar
June 7–9, 2011 in Stevens Point, WI

Applicant's Name_____ Member of WAIC?_____

Employer/Agency_____ Job Title_____

Address_____

City_____ State_____ Zip Code_____

Home Phone_____ Work Phone_____

Email Address_____

Application Date _____ Signature of Applicant _____

Signature of Authorized Official_____

An Authorized Official may be a fire or police chief, training officer, or person responsible for supervising the applicant in performance of his/her fire investigation duties

The Wisconsin Arson Insurance Council will award up to two (2) Seminar Grants to active law enforcement or fire service personnel. The WAIC will reimburse the grant recipient up to $250.00 for costs associated with attending the 2011 Wisconsin Chapter IAAI Spring Seminar in Stevens Point, WI

This grant will reimburse the attendee up to $250.00 for the seminar registration fee and lodging expenses. Included in the grant amount is a $20.00 meal stipend. The total amount of the grant, including the meal stipend will not exceed $250.00. In order to receive reimbursement the student receiving this grant must provide the WAIC Board of Directors with a "Tested" Certificate of Attendance, and receipts to account for registration and lodging expenses.

In the area below please explain the financial need for this grant. If you need additional room please attach a separate piece of paper. Please note if you have asked for, or received any other funds for this seminar.

The WAIC Board of Directors must receive the Seminar Grant application by April 15, 2011

- First consideration will be given to members of the Wisconsin Arson Insurance Council.
- **Applicants must be active law enforcement or fire service personnel.**
- Recipients will be determined by the WAIC Board of Directors.
- Application must be received by the WAIC Board of Directors by the close of business day on April 15, 2011
- Applications received after the deadline will be automatically excluded from consideration
- Incomplete applications will be disqualified from consideration
- Applications not signed by an "Authorized Official" will be disqualified from consideration
- A separate grant application is required for each individual applying for this grant

All travel and seminar arrangements are the responsibility of the grantee agency; the WAIC will not make travel or hotel reservations, or register attendees for a seminar. The WAIC will not reimburse late registration fees.

The WAIC will not pay for additional costs that may be incurred by the traveler over and above the original grant award unless that cost has been specifically approved by the WAIC Board of Directors in advance.

The WAIC staff may request additional information, documentation, or clarification on individual grant applications.

The final decision on all grant awards and allocations rests with the Board of Directors of the Wisconsin Arson Insurance Council.

Please return this form and any attachments to:

Wisconsin Arson Insurance Council
P.O. Box 751
Brookfield, WI 53008-0751

Or Fax to (262) 796-2599

Wisconsin Arson Insurance Council – Equipment Grant Program

Proposal: The Wisconsin Arson Insurance Council (WAIC) may provide public sector agencies with funds to help offset expenses related to heavy equipment used during the course of fire investigations if certain criteria are met.

Criteria: In order to receive funds from WAIC, the following criteria must be met:

- The fire investigation must be of no known accidental cause
- Applications must be submitted through the State Fire Marshal's Office by an agent of DCI
- When supportive resources are not readily available
- Funds must be used for heavy equipment with an operator
- Funds may not be used for site cleanup or contracting investigative services
- The funds must be for properties where insurance funds are not available. (rev suggested 3/16/2011)
- The funds are subject to availability which is determined by the WAIC board

Procedure: The need must first be met using the above criteria. The DCI agent in charge of the scene shall call the main office located in Madison and request assistance. It is up to the main office to contact the representative/s of WAIC for approval.

PRIMER ON PLASTICS – TAKEN FROM U.S. FIRE ADMINISTRATION/NATIONAL FIRE ACADEMY'S "COFFEE BREAK TRAINING" ARTICLES – A FIVE-PART SERIES BEGINNING JUNE 17, 2008

Office products and furniture are just some of plastics' many uses.

Plasticized materials play an important part in our daily lives. Many products we use regularly are made of one or more plastic components. We often discuss how plastics affect fire behavior, but what exactly are "plastics"?

"Plastics" are materials made from petroleum stock, and are capable of being molded, extruded, or cast into various shapes. There are many different kinds of plastic made from different combinations of compounds. Any material made of polymeric organic compounds and additives that can be shaped by flow.

"Polymers" include any of numerous natural and synthetic compounds of usually high molecular weight consisting of up to millions of repeated linked units, each a relatively light and simple molecule. A single molecule that can be chemically bound as a unit of a polymer is known as a "monomer."

"Elastomers" are polymers that resist and recover from deformation produced by force, and behave similarly to natural rubber. Elastomers consist of polymer molecule chains; those are cross-linked with each other in a network. Due to the cross-linked structure, the molecule chains cannot flow easily away from each other, therefore the material can't be melted without destroying the molecule chains itself.

"Rubber" is an elastic material obtained from the latex sap of trees (especially trees of the genera Hevea and Ficus) that can be vulcanized and finished into a variety of products, such as natural rubber, India rubber, gum elastic, caoutchouc, or balata. In general, plastics have a higher heat of combustion and rate of heat release that determines how they behave in a fire.

In the past 50 years, plastics made from petroleum have changed our lives forever. Elastomers and natural rubber products have been around longer, but every day we handle products that are made from one or more of these materials. The amount of additional fuel these products adds to a fire may be substantial. We describe this as "heat of combustion" and measure it in Btu/lb (J/kg). To compare, here are the average heat of combustion values for some common materials.

Material	Avg. Heat of Combustion	
	Btu/lb	J/kg
Paper	7,000	16,282,000
Wood	8,000 - 10,000	18,608,000 - 23,260,000
Plastics	15,000 - 22,000	34,890,000 - 51,172,000
Gasoline	22,000	51,172,000

The rate at which a fuel burns and releases its energy is known as the "heat release rate" or HRR and is quantified using Btu/sec (kilowatt). Remember, "heat release rate" is not the same as "heat of combustion" since it describes release over any specific time period.

Group	Plastics, Elastomers, and Rubber Fire Characteristics
A	High heat of combustion, and HRR higher than Group B plastics.
B	Heat of combustion may be as high as, or sometimes higher than, Group C, but the HRR is lower than a Group A plastic.
C	Plastic products that incorporate heat of combustion and HRR that are similar to ordinary combustibles

For fire protection purposes, plastics, elastomers, and rubber are divided into three "groups" based on their relative fire characteristics of both heat of combustion and heat release rate (HRR).

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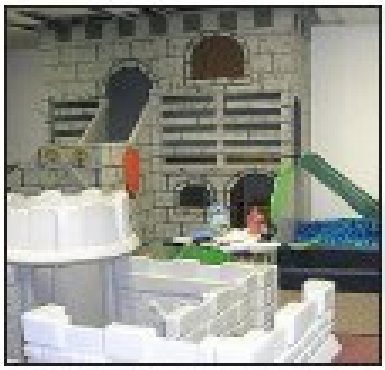
Sample Classification of Plastics, Elastomers, and Rubber*

Group A
ABS (acrylonitrile-butadiene-styrene copolymer), Acetal (polyformaldehyde), Acrylic (polymethyl methacrylate), Butyl rubber, EPDM (ethylene-propylene rubber), FRP (fiberglass-reinforced polyester), Natural rubber (if expanded†), Nitrile-rubber (acrylonitrile-butadiene-rubber), PET (thermoplastic polyester), Polybutadiene, Polycarbonate, Polyester elastomer, Polyethylene, Polypropylene, Polystyrene, Polyurethane, PVC (polyvinyl chloride—highly plasticized, with plasticizer content greater than 20 percent) (rarely found), SAN (styrene acrylonitrile), SBR (styrene-butadiene rubber).

Group B
Cellulosics (cellulose acetate, cellulose acetate butyrate, ethyl cellulose), Chloroprene rubber, Fluoroplastics—(ECTFE—ethylene-chlorotrifluoro-ethylene copolymer; ETFE—ethylene-etrafluoroethylene-copolymer, FEP fluorinated ethylene-propylene copolymer), Natural rubber (not expanded†), Nylon (nylon 6, nylon 6/6), Silicone rubber.

Group C
Fluoroplastics—(PCTFE)—polychlorotrifluoroethylene; PTFE—polytetrafluoroethylene), Melamine (melamine formaldehyde), Phenolic PVC (polyvinyl chloride—flexible PVCs with plasticizer content up to 20 percent), PVDC (polyvinylidene chloride), PVDF (polyvinylidene fluoride), PVF (polyvinyl fluoride), Urea (urea formaldehyde).

*Used with permission from NFPA 13, Standard for the Installation of Sprinkler Systems, copyright © 2007, National Fire Protection Association.
† "Expanded" plastics (such as expanded polystyrene cups) obtain their cell structure when a blowing agent or gas, usually pentane, is dissolved in the plastic.


A variety of thermoset plastics in a child care occupancy.

Since fire behavior may be affected significantly by the amount and arrangement of Group A, B, or C plastics in an environment, the fire protection professional must be able to categorize these materials to apply appropriate fire protection requirements. You can obtain more information about plastics from the American Plastics Council at www.plastics-info.com

A thermoset is a polymer that solidifies or "sets" irreversibly when heated or cured. Imagine the difference between a raw and a cooked egg: A cooked egg cannot return to its original form once heated, and a thermoset polymer can't be softened once it has "set." Thermosets

are strong and durable, and are used extensively in automobiles and construction, including applications such as adhesives, inks, and coatings. The most common thermoset is the rubber truck and automobile tire. Some examples of thermoset plastics and their product applications are given in the adjacent table.

Polyurethanes	Unsaturated Polyesters	Epoxies	Phenol Formaldehyde
Mattresses Cushions Insulation	Boat hulls Bath tubs and shower stalls Furniture	Adhesive glues Coating for electrical devices Helicopter and jet engine blades	Oriented strand board Plywood Electrical appliances Electrical circuit boards and switches

A thermoplastic is a polymer in which the molecules are held together by weak secondary bonding forces that soften when exposed to heat and return to their original condition when cooled back down to room temperature. Imagine an ice cube that can change from a solid to a liquid and back to a solid. Thermoplastics are commonly used in food packaging because they can be formed rapidly and economically into any shape needed to fulfill the packaging function. Examples include milk jugs and carbonated soft drink bottles. Other examples of thermoplastics are

Polyethylene	Polypropylene	Polyvinyl Chloride (PVC)
Electrical insulation Packaging Milk and water bottles Packaging film House wrap Agricultural film	Carpet fibers Automotive bumpers Microwave containers External prostheses	Electrical cable sheathing Floor and wall coverings Automobile instrument panels Exterior siding

The plastics-making process includes a series of important steps. Crude oil and natural gas are refined into ethane, propane, and hundreds of other petrochemical products. Using high- emperature furnaces, ethane and propane are "cracked" into ethylene and propylene. Then, a catalyst is combined with ethylene or propylene in a reactor, resulting in a powdered polymer. The polymer is combined with additives in a continuous blender, extruded, and then melted. The plastic is cooled and then fed to a pelletizer that cuts the product into small pellets. The pellets are used in processes such as extrusion, injection molding, and blow molding to make millions of plastic products.

Common expanded (above) and unexpanded plastics.

Plastics may be expanded or unexpanded. Expanded plastics are created when the plastic beads are placed into a mold, and a blowing agent or gas—usually pentane—is dissolved in the plastic. The closed mold is heated to soften the plastic, and the gas expands, or a blowing agent generates gas. The result is a fused, closed-cell structure of foamed plastic that conforms to a shape, such as expanded polystyrene cups. Styrofoam™ expanded polystyrene is made in a continuous extrusion process using expanded bead blowing.

Unexpanded plastics are made into films or sheets for other products ranging from windows to computer cases to aircraft parts. Unexpanded plastics can be cast or thermoformed. Casting is where molten resins are poured into a mold in the shape of the desired product. Thermoforming occurs when thermoplastic films are heated to soften the film, and then the soft film is pulled by vacuum or pushed by pressure to conform to a mold or pressed with a plug into a mold.

Expanded plastics tend to be more combustible than unexpanded plastics due to the increased surface area of the expanded plastic, the entrained air or gas in the expanded beads, and the overall lighter density of the final product. In general, when fire protection systems are designed to protect plastics, expanded plastics create a comparatively higher challenge than unexpanded plastics.

You can obtain more information about plastics from the American Plastics Council at www.plastics-info.com

U.L. 94 STANDARD FOR TESTING/RATING FLAMMABILITY OF PLASTIC

5V – Vertical Burning Test
- Must burn for less than 60 seconds after application of test flame
- Must not drip plastic parts

V-0 – Vertical Burning Test
- Must burn for 10 seconds or less with flaming combustion after application of test flame
- Total flaming combustion time must be less than 50 seconds for 10 test flame applications for each set of 5 specimens
- Must not burn with a flaming or glowing combustion
- Must not drip flaming particles that ignite dry surgical cotton 12 inches away from specimen
- Must not have glowing combustion that persists for more than 30 seconds after removal of test flame

V-1 – Vertical Burning Test
- Must burn for 30 seconds or less with flaming combustion after application of test flame
- Total flaming combustion time must be less than 250 seconds for 10 test flame applications for each set of 5 specimens
- Must not burn with a flaming or glowing combustion
- Must not drip flaming particles that ignite dry surgical cotton 12 inches away from specimen
- Must not have glowing combustion that persists for more than 60 seconds after second removal of test flame

V-2 – Vertical Burning Test
- Meets all requirements for V-1 except it does not have to meet "Flaming Drip Test"

HB – Horizontal Burning Test
- Burn rate does not exceed 1.5 inches per minute over a 3.0 inch span with thickness of 0.120-0.50 inches
- Burn rate does not exceed 3.0 inches per minute over a 3.0 inch span with thickness less than 0.120 inches
- Burn ceases before a 4.0 inch reference mark

Note that HB does not have to pass a "Flaming Drip Test" and that those tests HB does require are not for vertically-positioned plastic.

WAIC Membership Form Membership fee: $15/annually

Send to:

WAIC C/O Allmark Services

P.O. Box 751
Brookfield, Wisconsin 53008-0751

NAME
_____

ORGANIZATION
_____

TITLE _____ *PHONE*
*(_____)*_____

STREET
*ADDRESS*_____

CITY _____ *STATE* _____ *ZIP*
_____

*FAX NUMBER (_____)*_____

*TELEPHONE NUMBER (_____)*_____

E-MAIL ADDRESS:

Membership dues to W.A.I.C. are Tax-Deductible

If your department can use posters, coasters, or door hangers please contact:

Tenley Boutelle (DCI Arson Bureau) at 608-267-8945

WAIC is a non-profit group of individuals from the Fire and Police Service, Insurance Companies, and individuals whose common interest bond together in the fight against arson.