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AIC GREEN TASK FORCE

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Summary of Comments on Slide 1

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In this presentation, the Green Task Force will discuss various aspects of our profession and consider some choices and decisions important to making our work more sustainable and reducing our contribution to waning resources, burgeoning landfills and accumulating dangerous emissions. The field of conservation continues to mature in its understanding of materials and environments. We are now poised to take this body of knowledge one step further by creating more sustainable work methodologies and by rethinking environmental control methods and parameters with the goal of reducing our collective carbon footprint. Through sound practices and decision making, we can make a positive impact. This is a broad topic, which has been researched and discussed by the Green Task Force over the last two years.

Last year we reported on the results of our fall 2008 survey . Since then we have explored topics based on priorities that emerged from that survey. Today we begin to provide resources so conservators can use less polluting solvents, create less trash, and replace strictly-defined environmental standards with seasonally-appropriate targets. The biggest barriers or challenges conservators face in 'going green' are expenses, everyday work habits, lack of time, and information to implement change.

Today we will only skim the surface. This information will be published in a more in-depth form via our AIC web pages.

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First we will look at how we can improve our treatments, preventive conservation, and museum and lab environment. We will end with some examples of what AIC has already implemented.

Please note a pattern as we discuss the aspects of sustainability - each involves a complex decision. Every issue must be drawn through a matrix of factors, such as production, environmental impact, personal impact, recycling options, and disposal, considered along with regional, financial, and transportation circumstances. These factors complicate what might seem like a simple endeavor. The Green task force does not intend to tell you how to work, but instead presents a methodology for environmentally conscious decisions.

SO, let's start with studio and lab practices, which necessarily includes use of solvents and supplies.

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“If pollution cannot be prevented then, in descending order of preference, environmentally sound recycling, treatment, and disposal are listed as alternative waste management options.”

“Pollution should be prevented or reduced at the source whenever possible.”

EPA Guidelines Pollution Prevention Act 1990

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The US Environmental Protection Agency (EPA) Pollution Prevention Act guidelines for using any pollution producing material is to first and foremost use the least amount possible-Reduce. After minimizing use, we should reuse any waste. After opportunities to reuse are exhausted, then the remaining product should be properly recycled. Pollution that cannot be prevented or recycled should be disposed of in an environmentally safe manner. The most effective way to reduce solvent pollution is to select the most benign solvents that will fulfill task requirements.

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EHS

Environmental
Health & Safety

LCA

Life Cycle
Assessment

CED

Cumulative Energy
Demand

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We had hoped to present information today that would help conservators select solvents according to minimal pollution contribution. We looked at solvent rating systems such as the Scorecard Pollution Rating System by the EPA and one developed by the Institute for Chemical and Bio-engineers in Zurich, Switzerland. The EPA ratings are few and incomplete, and the Swiss standards are not entirely relevant to current US practices.

However, the Swiss method of considering multiple aspects of environmental toxicity is helpful, as it clarifies their decision making matrix into two groups: EHS-environmental, health and safety and LCA- life cycle assessment, scored according to the cumulative energy demand (CED) required to produce 1 kilogram of the solvent. The CED can differ between countries or between processing plants, depending on the disposal method -either distillation or incineration, the amount of carbon recovery achieved during disposal and the amount of solvent recycled or reused. Of these, solvent recycling is the highest variable because it, too differs by country and processing plant. In Switzerland, they have a 90% carbon recovery rate. In the USA there is no data for recovery, and we rely on individual workplaces to recycle used solvents. There is equipment available for solvent recycling, but it is not geared towards small users like conservators.

We are researching individual solvents, to assist you in making decisions. We will be posting information on the Green resources page of the AIC site regarding manufacture, environmental impact, disposal implications, and recycling possibilities that you can consider along with specifics of your practice.

1 http://cool.conservation-us.org/packages/solvent-solver/solvent_solver.html

<http://www.conservation-wiki.com/>



Aqueous Cleaning and the Modular Cleaning Program
(C. Stavroudis and T. Doherty developers)

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We can offer some resources at this point. An excellent aid for solvent selection is the National Archives Solvent Solver program which uses the principles of Teas Fractional Solubility Parameters to create a mixture of solvents that will have the same properties as a more toxic solvent. Reduce use of petroleum based products by employing water based systems, gels, steam, and varying temperatures. The Modular Cleaning Program is one good example of this. Other examples of non-solvent techniques can be found in our conservation wiki, such as in the paper conservation catalog where suggestions can be found for reducing or removing specific adhesives.

Solvent waste can be reduced by filtering and re-using whenever possible. Minimize loss through evaporation by measuring out only what is needed for a project, store solvents in tightly sealed containers, use self-closing dispensers, and pour from small containers - which also reduces the possibility of spills.

Some solvents we use become pollutants through vaporization or improper disposal, adversely impacting ecosystems and contributing to greenhouse gas emissions. Your fume hood may only extract the solvent from your lab and evaporate it into the atmosphere.

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Water purification systems

Consider feed water versus usable product ratio

Distilled and RO systems may have high feed water waste

Reusable DI filters require significant water for cleaning

A variety of water purification systems are employed in conservation settings. Water consumption is integrally tied to both the purifying process as well as the conservation treatment.

When selecting purification systems, the feed water versus retained or usable product ratio is considered along with demand, application, purchase, storage and maintenance costs. For instance, distillation produces small amounts of water very slowly and uses large amounts of energy. There is up to 95% waste of feed water to 5% of usable pure product. Deionization can produce moderate volumes of relatively purified water on-demand. It is convenient and quick, and may be sufficient for many applications. As it is ion-hungry, re-conditioning is typical. While the amount of feed water is much lower than distilled or reverse osmosis systems, deionizing filters that are reusable require significant amounts of water to clean them. Some reverse osmosis systems have a relatively large ratio of feedwater to usable water. However the ratio does vary from system to system and merits consideration.

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Treatment options that may use less water

vacuum suction tables/ disks

contact cleaning

humidification

blotter washing

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Consider substituting treatments that use large volumes of water with techniques that employ less. Vacuum suction tables, contact cleaning and humidification processes can be used creatively for less invasive treatments. Contact washing with blotters, screens or felt has the potential to replace full object immersion and subsequent repeated baths with dramatic reductions in water consumption.



green@conservation-us.org



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Treatment can yield less waste by careful supply selections: such as non-woven textiles for washing supports or blotters that can be laundered and used again; Sponges can sometimes be used in place of cotton wool; A single bamboo skewer can be used repeatedly to make customized swabs instead of using disposable pre-made swabs with wood handles; Heavyweight polyethylene sheeting in conjunction with low tack tape can save on plastic as it is less likely to tear, allowing for re-purposing.

Using a microclimate envelope within the framing system for flat items in place of an entire vitrine employs less material and reduces weight which allows for safer handling and reduces shipping costs.

If you have tips such as these to share, please send them to this email address, found on the AIC Green web page. Mary Gridely of the Cranmer Art Group did: sharing that paintings arrive at her studio in anything from an old blanket to a customized crate.

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After examination or treatment, they make sure the object is sent out from the studio properly protected with glassine or silicone release paper, backboard, face-board and plastic.

Previously, a lot of wrapping material was thrown away, being considered sub-standard in some way. They had a stamp made that alerts clients that they conscientiously reuse materials. They've had no complaints.

We need to encourage our packing and shipping colleagues to make high quality re-usable crates available for rental and purchase in the US. Alternatives to custom-made crates, which are well sealed with reusable cushioning adjustable to a range of sizes are available.

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In the survey that the AIC Green Task Force conducted in 2008, we found recycling to be the green initiative that AIC members are most likely to participate in at work, with 87% of respondents indicating that their workplace participates in recycling already.

Conservators demand high standards in paper products and recycled paper may not be suitable for conservation purposes. Some paper such as blotters contain fibers that can be recycled 5-7 times. We can make sure our high quality scraps are recycled. Since the fibers have already been processed, they may require 40-70% less energy and 55% less water to be made into paper again. Paper is the largest component of solid waste, making up about 40% of the poundage in landfills. The EPA estimates that at least ¼ of the used paper now in landfills could have been recycled.

For other materials, it depends on the market for the recycled goods. This is why it is equally as important to BUY recycled as it is to recycle. The economic downturn in the fall of 2008 led to a crash in the recycling industry. People were buying less and there was less need for raw materials. The value of certain recycled items, like paper and electronics, has just begun to return to pre-September 2008 levels. Recycled plastics, after a drop in late 2008/early 2009, are currently valued higher than they were 2 years ago. Other products, like metals and glass, are on their way back up slowly, but prices are still lower than they were during much of the previous decade.



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Sometimes recycling is not available and material scraps are too small to be re-used by conservators or their colleagues. Organizations such as school and community art programs will often take small pieces of materials for use in craft projects. On a regional basis a clearinghouse website similar to craig's list or freecycle would help implement access to reusable materials such as these and perhaps even cases and vitrines.



Waste disposal

*From Cradle to Grave:
Waste Management for Conservators*

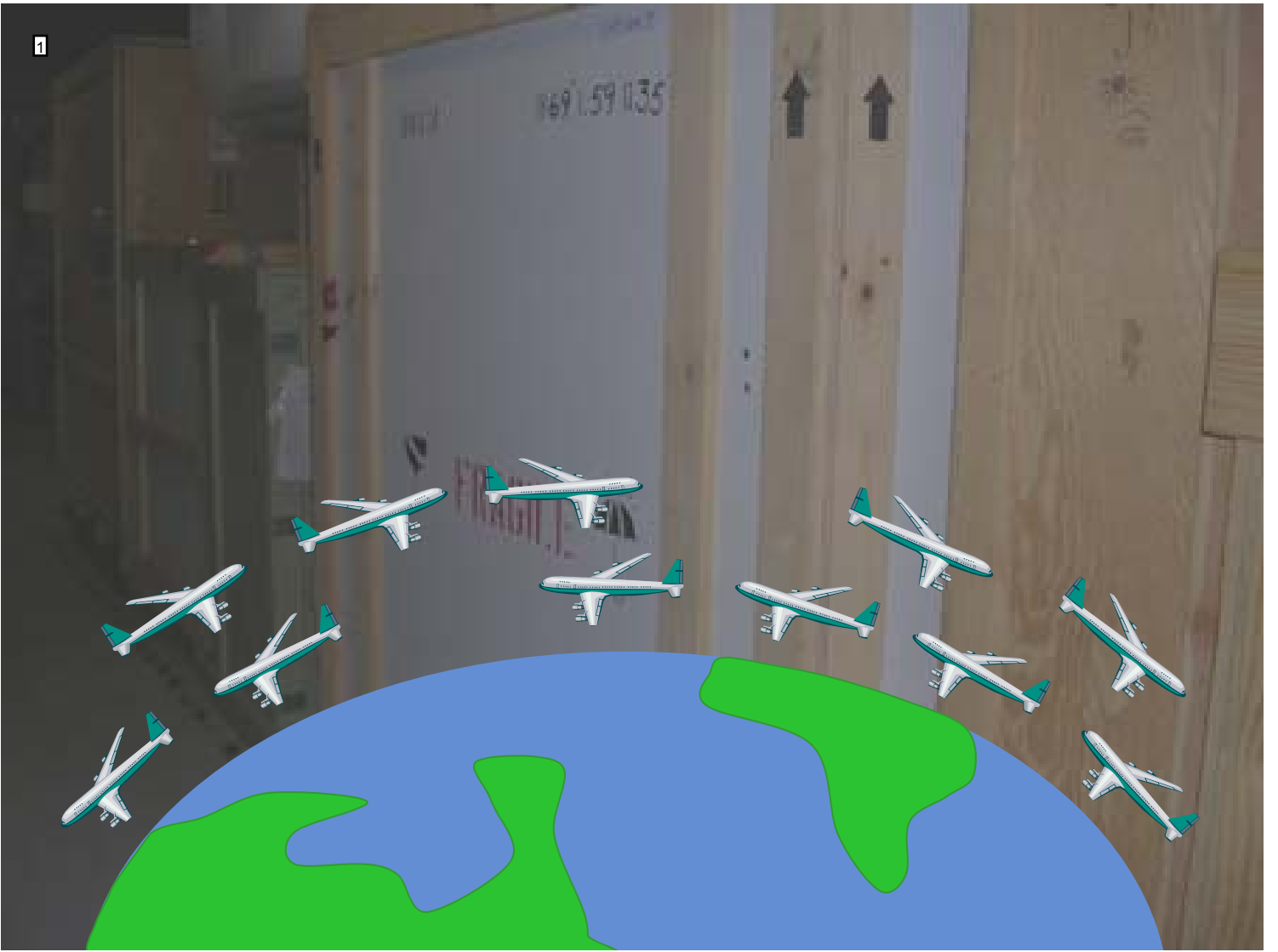
AIC News, November 2001 (26:6) insert 1-12



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Federal and state regulations dictate specific waste disposal requirements. All conservators have a responsibility to properly dispose of waste to avoid consequences that may lead to health, safety and legal issues. Institutions may have their own waste disposal procedures in place. For individuals and smaller practices, one option may be partnering with a local college chemistry department. Independent disposal operations exist as well. Depending on one's locations, they are permitted, licensed, or registered solid waste facilities. A readily available overview of solvent management was published as a special insert titled From Cradle to Grave: Waste Management for Conservators in AIC News in 2001.

Be aware of how much you are generating and the rules, resources and regulations in your locality for that volume.



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Along with producing waste and garbage, we use energy and increase our carbon footprint.

Carbon Footprint is the sum of greenhouse gas emissions created by activities and purchases over the course of a given time, usually caused by the manufacture, shipping, and lifespan of a particular object or group of objects. Conservators' carbon footprint is created by travel, energy for climate control, manufacturing and shipping of supplies.

Loans of collections are a major reason for travel in our field. For many loans, museums and collectors require a courier to oversee packing, handling, and installation of objects that require an "advocate" in attendance at all times. This practice is under scrutiny, and does need to be carefully examined in order to use resources, both energy and financial, wisely.

Slide 13.1

Museums and collectors can save resources by sharing expenses and engaging one conservator, who works for the lenders to oversee all of their objects through a loan exhibition.

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Environmental Control

Balance RH and temperature relative to collections and seasonal conditions



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Energy consumption for conservation, related to buildings, is most associated with environmental control. We employ various means to cool, heat, dehumidify and humidify collections, often within very tight ranges.

Site specific environmental guidelines and standards along with mechanical and programming improvements are being explored by teams of conservators, engineers, environmental consultants and architects in effort to reduce energy consumption.

We don't promote disposing of working mechanical systems and replacing them before their useful life is over in order to go along with revised environmental standards. Therefore, support your colleagues in using the system you have in the most efficient and economical way. This is done by making sure equipment is working correctly and adjusted for maximum efficiency. Seasonal adjustments may reduce consumption and costs without adversely impacting overall preservation efforts.

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Conservation labs or studios can be inherently sustainable. We tend to prefer flexible workspaces, furniture and equipment, which change with minimal added resources, according to project. Green products can reflect conservation standards. As we choose materials that have low VOC's and minimal off-gassing for storage and display environments, we are simultaneously choosing materials that improve indoor air quality.

Energy use increases with the use of solvent extraction systems. A rheostat can be installed on fume hoods and snorkels that do not require operating at a single high volume air handling capacity. This wastes less energy with greater air handling control. The more benign products we use, the less ventilation is required.

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Lighting

Tungsten Halogen
Tube & Compact Fluorescent
LED (Light Emitting Diodes)
Metal Halide
Daylight

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Proper lighting is critical for conservation work and viewing collections. It consumes energy and damages objects as well. Using light judiciously is practical. Whenever technologically possible, turning off un-needed light makes sense. The use of motion sensors, light switches, and timers are strongly encouraged.

Consider the following sources for illumination:

tungsten - halogen
tube and compact florescent
Light Emitting Diodes or LED
metal Halide
Daylight

Once again, one must carefully define goals, and apply a matrix of questions in order to get the best answer for a given application. In the case of natural light, as in each type of light listed, there numerous factors to consider. I won't list them all, but notice that particular details of the application make all the difference as to pro or con:

For example:

A window uses free solar energy to provide illumination.

But, it can leak conditioned air and increase heat in a building.

A window can offer a view, or illuminate a historic interior in an accurate way

But, can provide enough light in a museum setting that more cannot be added by an exhibit designer without exceeding the institution's guidelines.

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For more information, visit
[www.conservation-
us.org/green](http://www.conservation-us.org/green)

Email tips or questions to
green@conservation-us.org

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Now let's look at implementation of sustainable practices by AIC.

AIC is currently developing an online directory to supplement the print version. In an effort to to save paper and lower costs associated with printing and mailing, the print edition of the Directory has also been reduced in length.

JAIC is accessible via an online archive

Beginning with the July, 2010 issue, look for a new e-newsletter to supplement the print version of AIC News. This will be emailed to AIC members and will link to the full text of the newsletter online. AIC News will continue to be made available by print. The average length of printed issues has been reduced by moving more content online. This effort has also reduced paper usage and costs associated with printing and mailing.

Online courses are offered when appropriate, providing economical professional development and reduced travel.

Response to the improved AIC website has been very good. We've reduced paper use by renewing membership and registering for our annual meeting on-line.

Annual Meeting:

The tote bags provided to attendees at this Annual Meeting are re-usable bags constructed from recycled materials.

The meeting program is printed on Forestry Stewardship Council-certified paper.

Signage materials have been reduced over the last two Annual Meetings by using a combination of electronic monitors for room identification and multi-use signs.

You are asked to turn in your nametags at the conclusion of the meeting for re-use. Turning them in enters you in a drawing for a special prize.

The Board has discussed the future of annual meetings and it is likely that we will see increased use of electronic resources, such as blogging, to deliver content to those who are not able to attend. However, there is no intent to eliminate face-to-face meetings. Conservators find the annual meeting gatherings to be extremely useful in furthering the profession and our professional relationships.

One of the Green Task Force's projects has been to create a website to disseminate information. It curenly contains a bibliography of readings and websites that one can use to research green topics, reviews of lectures and conferences, and recycling tips. We also invite you to send in information, suggestions and tips so that the site can grow and evolve.