Ten tips for safer modeling

You don't have to take chances with your health to enjoy your hobby

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Is your workbench as safe as it could be? Use our ten tips to review your setup and procedures, and to find ways to make modeling safer for both you and your family.

SURPRISE: Modeling doesn't have to be hazardous to your health.

Even though your workbench may be covered with paints, thinners, glues, resins, two-part putties, and sharp-bladed knives, it doesn't necessarily have to be a danger zone. By becoming more aware of the materials you work with, and by taking some simple precautions, you can make modeling a safe – if not foolproof – activity.

#1: Pick the right location. First, make sure the site where you build is a safe one. It's never a good idea to mix food and modeling, so think twice about setting up your workspace on the kitchen table.

Your building space should have good lighting and adequate ventilation, especially if you'll be airbrushing (see "Build your own spray booth" in the December 2000 FSM for a more complete discussion of ventilation). Make sure that you are actually venting any fumes outside the house – sending them to another room won't give you adequate protection.

A sturdy work surface is essential. Some modelers prefer the angled work surface of a drafting table, but if that's what you choose, you'll need to take extra precautions to ensure that nothing's going to roll off (especially knives). It's also handy to have easy access to a sink so you'll be able to wash off models, rinse out brushes, or clean up quickly in case of a spill or an injury.

Lastly, if you share a house with children or pets, many potentially harmful incidents can be avoided if you're able to store all your modeling supplies behind closed (or locked) doors when they're not in use.

#2: Watch out for sharp pointy things. When I asked experienced modelers for their modeling horror stories, everyone had a hobby-knife story to tell – they didn't even have to think about it. The two most important things to remember about hobby knives is that if they have round handles, they will roll – and the end which usually falls first is very sharp.

The first condition is something you can easily fix. Slide a rubber grip onto the round handle or tape a section of sprue to it to take the "round" out. Keep the knife in a safe area when you're not using it.

The second condition is actually one you want to maintain – a sharp blade in the handle at all times. As cooks know, a dull cutting edge causes more injuries and problems than a sharp one, which will cut quickly and cleanly. The cut you get from a sharp, fresh blade is likely to be much cleaner and heal more quickly than one from a blade that might be chipped, dull, or dirty. (You already know that a clean, sharp blade is better for your model as well, right?)

If you're the only one in the world with access to your workshop area, these guidelines might be enough. But if you have modeling buddies, children, pets, or other visitors to your workbench, make extra sure that sharp-edged tools (from hobby knives to razor saws and sprue cutters) are kept out of reach and out of sight from anyone who doesn't know how to use them properly.

Do children – yours, or the neighbor kids – have access to your workshop? Remember that bright-colored metal handles or rubber grips make tools look like toys to young children, and very young children explore their world by touching and tasting. Get down on one knee and see what the area looks like from their perspective. If it's full of bright, glittering, sharp tools that are easy for kids (or cats or dogs) to get access to, it's time to reorganize. Even if you only model after the kids are asleep, keep their safety in mind and put away your materials after you're done for the night, and lock up the area if you can. You never know when someone might get up for a midnight snack and start exploring where Daddy (or Mommy!) builds the pretty airplanes.

Triangular-shaped grips will keep your hobby knife from rolling. A "sharps" container keeps used blades out of household trash, and away from fumbling fingers.

Safety glasses, a respirator, and a sturdy apron can help protect you from dust, fumes, and flying debris.

Look for the warning label – then read it. A good label will tell you precautions to take, and what to do in case of an accident.

#3: Stay out of the sand trap. Sanding is another activity that is potentially hazardous, particularly when you're dealing with resin parts. The dust given off when you dry-sand resin is a very fine-grained particulate that may cause problems if you inhale it. Three ways to cut down on this risk are to wet-sand, to wear a mask or respirator, and to ensure adequate ventilation in your work area.

The March 2000 "Workbench Tips" booklet from FSM describes a good setup for wet-sanding larger resin parts. Use a rectangular casserole or baking dish, and glue sandpaper to the bottom with rubber cement. Add water and a part to be sanded, and your efforts will produce a slurry rather than a dangerous dust. (Make sure you wash your hands carefully after you've had contact with the slurry.)

Whenever you're sanding, go slowly and check your work continually. If you get into a rhythm and lose concentration, you may find (as other modelers have) that you've sanded through your fingernails and into the skin before you notice that anything is wrong. If you're dry-sanding, the dust will get on your clothes – change them when you're done.

#4: Breathe easy. Dust and chemicals can harm your lungs, especially when you're exposed to them regularly and over a long period of time, as most modelers are. Disposable dust masks are best for when you're sanding; when you're spray painting or airbrushing, though, dust masks won't do a thing for airborne solvents – it's time to use a respirator.

But even the best respirator can't protect someone who isn't wearing it – for the sake of the spouse, kids, and pets, ventilation is essential. Check your setup often to make sure it's still venting all the fumes outside.

#5: Be extra careful with power tools. The misuse of power tools in modeling isn't a major source of injuries, but it can be a source of major injuries. Most of the time, a power tool isn't necessary for good modeling – you can do just fine with hand tools and patience, and the skill that develops over time. By working with your hands, you become sensitive to the nuances of pressure, to the capabilities of your tools, and to the range of tasks you can perform. Rarely is a job too big to be done by hand.

Power tools do get brought out occasionally, though, when a job seems too big or seems to take too long. Just make sure you aren't using power as a substitute for patience. Mistakes happen more often when you rush your work – and with power tools, mistakes happen faster, and with a greater chance of serious injury.

If you feel the use of a power tool is justified, use it the way it was meant to be used, and follow the manufacturer's instructions. Always wear protective eyewear, since cutting or drilling plastic (or resin, or metal) could cause parts to fly. Don't hold a part in one hand and a cutting tool in the other – clamp the part securely, then make sure it's positioned so that any chips or fragments fly away from you. Wear gloves when necessary, and remove jewelry and loose clothing. If others are present, make sure you control who has access to power tools (and their cords). Remember that drilling and cutting create dust, so keep the air flowing and wear a mask and/or earplugs when necessary.

Never modify a power tool, or use an attachment on a material it was not designed for. Ceramic cutting disks (for motor tools) are hard but brittle, and can shatter if you turn the tool while you're cutting – with disastrous results.

#6: Know your chemistry. You can call them hobby materials, or artist's supplies, or even cleaning products, but glues, paints, solvents, and sealers are all chemicals. Some of the combinations of these chemicals are relatively harmless, but other combinations can be risky, dangerous, or fatal. Understanding what you're working with – and taking basic precautions – minimizes your risks of injury or illness as a result of your modeling hobby.

Most of the information you need is right in front of you on the package. Even the smallest label on the tiniest bottle of super glue tells you what the basic hazards are, how you can avoid them, and what to do in case something goes wrong.

For more detailed information, especially for petrochemicals, solvents, or just materials you don't know very much about, you should consult a Material Safety Data Sheet (MSDS). You can get these by writing to the product's manufacturer, or by asking at the store where you bought the product. (You can also find them in several places on the Internet, including www.msdsonline.com.)

An MSDS isn't always easy to read, and it will contain much more information than you'll want to know (unless you're an industrial chemist). But it does contain a lot of information useful to the modeler, including how to store it, how to clean it up, what to do for first aid in case of emergency, and what health hazards it might have for you if it is misused. It will also have the manufacturer's name, address, and phone number – handy if you have a question the MSDS doesn't answer.

#7: Know more about art supplies. Art schools have only recently begun to realize the importance of training students about the possible risks of the materials they use. Many art materials are not immediately dangerous, but can pose eventual health risks from exposure over long periods of time.

For a concise look at the possible risks of a wide range of art materials (including many used by modelers), as well as discussions of MSDSs, ventilation, and safe working practices, consult Michael McCann's *Health Hazards Manual for Artists* (see References). This inexpensive paperback book should be within reach of every modeler's workbench.

If you've been modeling for a long time, try to take a fresh look at the way you work. Have certain procedures become automatic? Are some tasks so familiar that you don't need to think about them? Do you take risks that you don't even notice anymore?

Guidebooks to artist's materials can help you understand the information a Materials Safety Data Sheet (MSDS) will provide.

In case of emergency

Even if you take precautions, accidents can happen. In case of accidental poisoning, your first call (in the U.S.) should be to 911. You could also call the Poison Control Center (1-800-815-8855), your local hospital emergency room, or your family doctor. Here's what to expect if you ever need to make that call.

What will paramedics want to know?

What did the victim take? What type of material did they take? How old is the victim? Is the victim conscious? breathing? alert? Can the victim talk?

What can I do now?

If the substance was an acid or alkali, the dispatcher may instruct the victim to drink water or milk to dilute the poison.

What happens next?

You will probably be asked to wait for help to arrive. If you want more information about the poison, the dispatcher can give you the number for the Poison Control Center.

For example, painters have long been taught to restore the point of their brushes by putting them in their mouth. They've been doing this for so long that it has become habit for them to lick their brushes to a point at several points during the painting process, not just after they have scrupulously cleaned their brush at the end of a session. This is one way for trace amounts of paint, paint-contaminated water, and thinners to enter the body and begin to cause long-term health problems, so schools are now discouraging this practice. It may be a hard habit to break.

Keep food and drinks separate from your modeling activities, and avoid using food containers to store anything that isn't food. If you have to guess which soda can holds soda, and which one is the one you're using to clean out your paintbrushes, you're taking too big of a risk. Label containers clearly so no one can make a mistake about what's inside.

Wear gloves when paint might get on your hands, and don't wash your hands in solvent.

#8: Use safe procedures. Be sure you're using materials properly (we'll discuss Future later), and be extra careful when you're trying a new product or using it in an unusual way. Just like Dad always told you, it's best to use the right tool for the right job. (Thanks, Dad!)

Does that mean you can't take shortcuts, substitute materials, or get creative? No, but it means you have to be especially careful to understand the materials you're working with, be able to anticipate what might go wrong, and to know what to do if something does go wrong.

Some modelers treat building techniques like state secrets, but most are willing to share what they've learned with anyone who's interested in knowing it. If you're picking up tips from a buddy, don't be afraid to ask questions until both of you are sure you understand what to do. It's foolish to end up in the emergency room because you didn't want to ask a "stupid" question.

Here's an example of how even a simple instruction can be misread. "Heat your can before spray painting" means:

A. put the spray can in the microwave for 10 seconds (remove plastic cap first)
B. place the can in a boiling water bath for 5 minutes
C. place the can in 2-3 inches of very warm water for 10 minutes
D. wrap a hot water bottle around the can for 20 minutes

The correct answer is C, but the point here is that all of the answers could be inferred from the original statement. All of them are logical in some way, but only one of them is both safe and effective – so make sure you know exactly what your buddy means when you're in a tip-swapping session.

#9: Be careful with the Future. Though modelers have been airbrushing with it, painting with it, and dipping clear parts in Future acrylic floor polish for years, it's important to remember that Future is a floor care product. That was what it was designed for – and more importantly, tested for. The MSDS for Future is based upon the product being used as a floor polish. While Johnson Wax is aware that modelers are using their product, they cannot recommend additional safety measures that might be necessary for the modeler – no one knows what they are. It never hurts to have extra ventilation.

Also, Future doesn't last forever. If you can't remember how long you've been using your container of Future, call the Customer Service phone number printed on the label. They can tell you how old your container is – and whether it should be replaced. Note: Because Future has not been tested for airbrushing or painting on plastic, its properties may or may not change as it ages. But just in case, you may want to buy only as much at a time as you know you'll use up in a year or two.

#10: Use common sense. The most important asset you can have for safe model building is your own self-education. Know the materials you are working with. Know what they are, how to work with them, what they can and cannot do, and what to do if something goes wrong. Most of the information you'll need is right there on the label.

Know what chemicals, such as solvents, interact badly with other chemicals. This you can find out by getting an MSDS and reading it thoroughly, then by taking action: by creating safe storage areas and by using safe practices as you work.

If you have special medical conditions, such as eye problems, lung problems, or liver damage, talk with your doctor about the chemicals you use to find out if they might aggravate your condition (or if your pre-existing condition might aggravate the effect of the chemical).

Bottle, bottle, what's in the bottle? If it isn't labeled – like the mystery bottle on the left, – there's often no safe way to know what it contains or how long it's been in there.

REFERENCES

Health Hazards for Artists, 4th Edition, Michael McCann, The Lyons Press, New York, New York, 1994

Artist Beware, 2nd Edition, Michael McCann, The Lyons Press, New York, New York, 1993

Artist's Complete Health and Safety Guide, 2nd Edition, Monona Rossol, Allworth Press, New York, New York, 1994

www.msdsonline.com

www.winsornewton.com (click on The Complete Creative Encyclopedia, then on Commonly Asked Questions, then on Health & Safety)

Know when you need ventilation, and make sure you have more than enough. Then, use it when you should – which is every time you paint, or sand, or use a solvent.

Take the same good care of your modeling tools as you do of your finished models. Store items (especially paints and solvents) in well-sealed and well-labeled containers, in the appropriate temperature range. If you have old materials, especially petrochemical solvents, call your local hazardous materials disposal facility to find out if what you have is still safe to use – and if it isn't, how to dispose of it safely. Even Future breaks down eventually.

Protect your skin by wearing gloves; protect your lungs by wearing a mask when necessary. Pay attention to how you feel as you model – if you feel sleepy, inattentive, or distracted, it's time to take a break.

Protect your family by storing your modeling supplies safely. Glues, solvents, and paints will affect children, pets, and pregnant women more strongly than they'll affect you, even if the chemicals are in lower concentrations. Don't assume that if you can't smell anything, there's nothing harmful in the air.

In short, use common sense to anticipate and prevent accidents. This includes using tools for their designed purpose – just as you know you shouldn't substitute a screwdriver handle for a hammer, don't model on a wobbly tray table when it will only take a minute or so to clear off your worktable. Keep sharps covered or out of casual reach – from yourself as well as others. Pay attention to what you're reaching for. If something rolls off your desk, get out of its way and let it fall – odds are it will be safer to pick up (or clean up) once it's on the floor. Then find a way to keep it from rolling off again.

Precautions aren't intended to prevent you from modeling – they're meant to keep you modeling, happily and safely, for years to come, and to keep you able to share the enjoyment of modeling with the next generation of modelers. FSM

What's an MSDS?

The Materials Safety Data Sheet (MSDS) form is a detailed information sheet about a specific chemical mixture. It has a specific logical format: information is always presented in the same order. But graphically, MSDS forms may look very different, and different manufacturers' versions of what seems to be the same chemical may have very different information on their forms.

Take cyanoacrylate (super glue) for example. Tech Hold super glue, manufactured by Tech Spray, contains ethyl-2-cyanoacrylate and hydroquinone. Its MSDS recommends you wear solvex gloves for skin protection, and safety goggles for eye protection; it "is not a regulated carcinogen."

Loctite super glue, on the other hand, is composed of substituted imidazole and acrylonitrile – the latter of which is classified "as a SARA Section 313 Toxic Chemical." Recommended personal protection includes "chemical goggles with full face shield" and "gloves, overalls, aprons, or boots as necessary." This particular glue is considered a hazardous chemical when it comes to disposal, so you can't just throw the empty bottle in the trash can.

These glues serve the same purpose and work the same way – but they are composed of different chemicals. Their storage, use, and disposal require different procedures.

The good news is that you can research all this stuff before you buy it. Find out in advance what you'll need to do to stay safe, and eliminate any nasty surprises.