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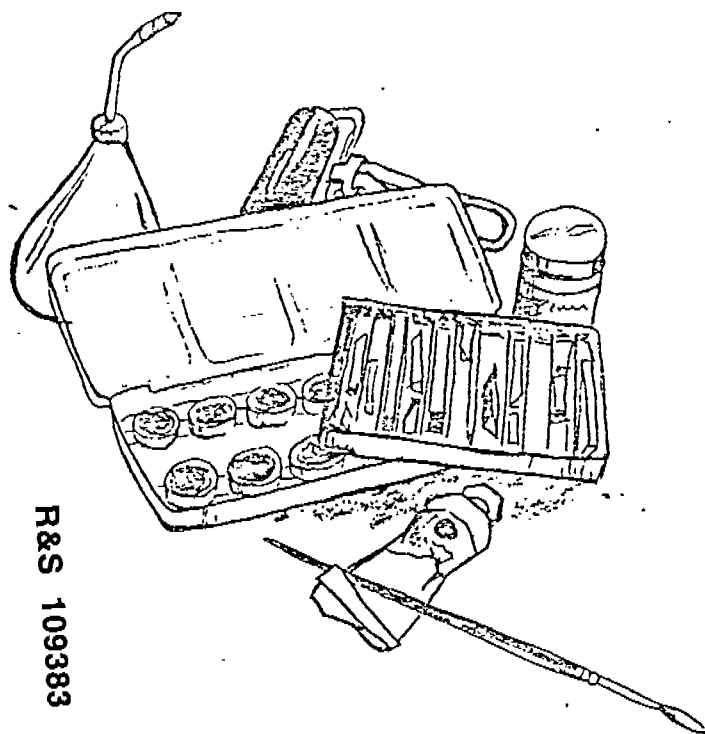
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HAZARDS IN ARTS AND CRAFTS

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The arts and crafts field has become a big hobby field and also big business. With people having more leisure time on their hands, and many retiring early to "leisure" and "golden age" villages, the hobby market has gained considerable importance. The so-called nostalgia kick, no doubt, also has had its influence as to young people's marked interest in the arts and crafts. When a great many amateurs enter a field, it is important that their attention be called to the hazards involved in many hobbies. CR has no intention to destroy its readers' joy in craft work; on the contrary, this article is intended to help them to enjoy many years of good health in successful work in the arts and crafts.

The work of two eminent experts in the field of toxicology of art supplies and materials has just come to the attention of CR's editors. With their kind permission we are herewith reproducing in very abbreviated form some of the material they supplied.

Badi M. Boulos, M.D., Ph.D., Associate Professor of Occupational and Environmental Medicine of the University of Illinois Medical Center in Chicago is to be congratulated on having taken a special interest in the health problems of artists and those who work in certain crafts. The following are edited excerpts of his talks on Health Hazards in the Arts given at a conference at the Chicago Circle Campus of the University.

The respiratory system is the major route of exposure to toxic substances in the arts and crafts profession. However, the skin must be considered as a second major route of entry of compounds into the body. Not to be forgotten is, of course, the oral route; smoking, drinking, and

"Most artists and craftspersons are unknowingly using materials that are hazardous to their health. Being aware of the hazards of materials and knowing how to work with them safely should be an essential part of the learning and practice of arts and crafts."

From "Health Hazards Manual for Artists"

by Michael McCann, Ph.D.

eating during painting or the pursuit of any other craft and artwork is therefore to be strictly avoided. Proper, adequate ventilation, proper handling of compounds, and wearing of protective clothing are of the utmost importance.

In working with pottery, one is working with asbestos, talc, sand and silica, and kaolin, and is exposed to carbon monoxide, and vapors of metals. Diseases that can be produced by these agents—metal fume fever, asbestosis, mesothelioma, and cancer of the lung—are well documented.

In the field of plastic models, polymer fume fever, and the relationship of vinyl chloride to angiosarcoma of the liver and cancer of the kidneys are, unfortunately, well known.

Painters work with solvents such as toluene, benzene, and methyl butyl ketones, as well as with lead, chromium, and arsenic. Some solvents, besides being highly volatile, can have a serious effect on the nervous system in the form of depression and even unconsciousness. Benzene can cause cancer of the blood, mainly leukemia. Arsenic, in use as a pigment in paints, is a well-known carcinogen to humans. Another frequently used component in pigments is lead, which has its effect on the nervous tissues (peripheral neuritis and encephalitis) as well as the kidneys (nephritis and nephrosis) and the hematopoietic system (anemia and deficient hemoglobin production).

Michael McCann, Ph.D., Director of the Art Hazards Resource Center in New York publishes a question and answer column in Art Workers News from which we reprint here the following important information:

"Art Materials and the Reproductive System"

"Do men and women react differently to toxic chemicals? This was the topic recently of a Washington conference on Women and the Workplace. The general feeling was that, aside from chemicals affecting the reproductive system and pregnancy, there is not much difference. The main reasons for these exceptions are the difference in the sex organs and the fact that only women can get pregnant.

"We can divide the effects of chemicals on reproduction into three basic categories; effects prior to pregnancy, effects during pregnancy, and effects on the new-born infant and child."

"Prior to pregnancy, chemicals (including those used in art) may affect both men and women. Reactions include interference with sexual function (e.g., loss of sex drive), lowered fertility, genetic damage and difficulty in conceiving. Women can develop menstrual disorders, and men can develop problems with the testes and prostate.

"Lead, for example, causes menstrual disorders in women, and loss of sex drive, atrophy of testes and possible sperm alteration in men. It is also thought to cause decreased fertility and mutations. Carbon disulfide, a solvent, also severely affects the reproductive systems of both men and women. Xylol and toluol are suspected of causing menstrual disorders in women.

"Chemicals causing genetic damage are of particular concern because even low exposures may cause mutations. Exposures to mutagens (mutation-causing chemicals) commonly result in spontaneous abortions, and birth defects which can be passed on from generation to generation. Exposure of either men or women may result in mutations since either the man's sperm or the woman's egg can be damaged. For example, a recent study showed that wives of vinyl chloride workers had more stillbirths and miscarriages than other women. Other chemicals that are mutagenic or are suspected of being mutagenic include lead, trichloroethylene, and anesthetic gases. Many other chemicals have been shown to be mutagenic in animal studies, but they have not been studied in people.

"Chemicals causing damage during pregnancy can affect either the pregnant woman or the developing fetus. In the first case, the effect is due to the fact that during pregnancy a woman's metabolism is very different from normal. Anemia is a common problem and chemicals like lead and benzol which can cause anemia are particularly hazardous. In addition, pregnant women are susceptible to respiratory problems and certain types of physical strain.

"Many chemicals—teratogens and mutagens—can damage the growing fetus, even when present in very small amounts, to cause severe birth defects and frequent miscarriages. Thalidomide is a classic example. Chemicals which have been shown to cross the placenta and enter the fetus to cause damage include many metals (lead, cadmium, etc.); many organic solvents (benzol, chlorinated hydrocarbons, carbon disulfide); carbon monoxide (cigarette smoking causes underweight babies); anesthetic gases, aspirin and many others. In addition, some chemicals may cause cancer in the children of women exposed to them during pregnancy. Examples are some pesticides and diethylstilbestrol (DES).

"Finally, many chemicals can injure infants and children. One example is poisoning of an infant caused by breastfeeding when the mother has been exposed to toxic chemicals. (For example, methylene chloride has been shown to be present in the mother's milk up to 17 hours after exposure.) Other problems include exposure caused by children being present when toxic substances are being used, and the carrying home of toxic dusts on clothes and shoes. For example, some children of lead workers have developed lead poisoning from lead carried home on the father's clothes.

"Recommendations: One major problem is that most chemicals—including most art materials—have not been tested to see if they cause mutations before pregnancy or

damage the fetus during pregnancy. It is clear that many chemicals do so, and can have these effects in small amounts. Pregnant women should not work with art materials which could enter the bloodstream—and from there the fetus—unless it can be shown that they are not being exposed. This includes exposure from skin contact, inhalation or accidental ingestion. (In cases of pregnant women exposed to these materials at work, this brings up questions of paid furloughs or job transfers without loss of pay or seniority, as is the practice in several European countries.)

"The basic problem with this approach is that often a woman does not know she is pregnant for several weeks, and it is the first 12 weeks of pregnancy that are the most hazardous. This makes it crucial for a woman to find out if she is pregnant as soon as possible.

"Chemicals causing mutations (e.g., lead, vinyl chloride) also fall into the category where neither men nor women should risk exposure, since artists cannot work safely with these materials.

"Overall, the solution to these problems is to identify which chemicals are dangerous and to get rid of them, and to minimize exposure to all chemicals so that you are protected from as yet unidentified chemicals which might cause mutations or affect the growth of the fetus."

On the question of hazards of synthetic pigments (acrylics) and water colors, Dr. McCann writes this:

"With few exceptions, the same pigments are used in acrylics and water color as in oil paints. The difference is in the vehicles and thinners used in each medium. Therefore, in terms of the pigments, acrylics and water colors are just as hazardous as oil paints. Pastels, on the other hand, are more hazardous because of the danger of inhaling the pigment-containing pastel dust. As regards thinners, oil paints are more hazardous because of the solvents used. Here I would recommend using mineral spirits (odorless paint thinner) instead of the more hazardous turpentine."

For those of our readers who would like more information, we would highly recommend Dr. McCann's excellent 27-page paperback booklet "Health Hazards Manual for Artists," which is available for \$2.50, plus 25c for shipping, from the Foundation for the Community of Artists, 220 Fifth Ave., New York, NY 10001. The book explains in detail what parts of the body are affected by various substances and separate chapters deal with the hazards encountered in painting, ceramics, sculpture and casting, welding, soldering and brazing, working with plastics, print making, and photography. Safety measures to be taken in a studio and advice for personal protection are also included. In our opinion the book is a must for libraries of schools and colleges with art departments, as well as for the individual artist or hobbyist.

Note: A report of the complete proceedings of the conference on Health Hazards in the Arts was in preparation at the time this article went to press. A limited number of copies of the proceeding will be made available. Readers who would like to obtain more information should write to Mrs. Gail Baraziani, c/o Dept. of Occupational & Environmental Medicine, University of Illinois Medical Center, Chicago, IL 60680.