

When handled carelessly, photographic chemicals, whether homemade or store-bought, can create serious health hazards. In recent years, there has been increasing concern over such hazards. Information on this subject is still scarce. By law, manufacturers must provide safety warnings on the labels of their products. Many manufacturers also publish safety data sheets which they will provide upon request.

A very helpful source for information in this area is: *Health Hazards Manual for Artists* by Michael McCann. This booklet contains a short section on photographic health hazards, as well as useful information about ventilation and personal protection. The section on photography is reprinted here in full with the permission of the author:

Many of the chemicals used in photographic processing can cause severe skin problems, and, in some cases, lung problems through inhalation of dusts and vapors. The greatest hazard occurs during the preparation and handling of concentrated stock solutions of the various chemicals. During these steps in particular, it is essential to wear protective gloves and goggles (to protect against splashes). Special care should be taken to avoid skin contact with powders and to avoid stirring up dusts which can be inhaled. Good ventilation is important to get rid of vapors, especially from the fixer.

Black-and-white processing includes developing, stop bath, fixing and rinsing steps. The developer usually consists of hydroquinone and Metal (monomethyl p-aminophenol sulfate), both of which cause severe skin irritation and allergic reactions. These are dissolved in an alkaline solution containing sodium sulfite and sodium carbonate or sodium hydroxide. These chemicals can cause skin irritation and even burns. Hands should never be put into the developer. If skin contact does occur, the skin should be washed copiously with water and then with an acid-type skin cleanser.

The stop bath consists of a weak solution of acetic acid. The concentrated acid can cause burns, and inhalation of the vapors can irritate the breathing passages and throat. Potassium chrome alum, sometimes used as a stop hardener, contains chromium and can cause ulcerations especially in cuts and nasal membranes.

The fixer usually contains sodium sulfite, acetic acid, and sodium thiosulfate (hypo), boric acid and potassium alum. The mixture of sodium sulfite and acetic acid produces sulfur dioxide which is extremely corrosive to the lungs. Potassium alum, a hardener, is a weak sensitizer and may cause skin dermatitis.

Many intensifiers (bleaches) can be very dangerous. The common two-component chrome intensifiers contain potassium dichromate and hydrochloric acid. The separate components can cause burns, and the mixture produces chromic acid. Its vapors are very corrosive and may cause lung cancer. Handling of the powder of another intensifier, mercuric chloride, is very hazardous because of possible inhalation of the dusts and resultant mercury poisoning.

The commonest reducer contains potassium ferricyanide. If it comes into contact with heat or concentrated acids, the extremely poisonous hydrogen cyanide gas may be released.

Hardeners and stabilizers often contain formaldehyde which is very poisonous, extremely

irritating to the eyes, throat and breathing passages, and can cause dermatitis, severe allergies and asthma. Some of the solutions used to clean negatives contain harmful chlorinated hydrocarbons.

Color processing involves many of the same chemicals used in black-and-white processing. Developers also contain dye couplers, which can cause severe skin problems, and some solutions contain toxic organic solvents.

The above concerns are well stated, although the situation is probably not as bleak as it sounds. Different people will react in various ways to different chemicals. For example, not everyone's skin is sensitive to Metol; besides, many developers contain phenidone, rather than Metal. Furthermore, as manufacturers become more aware of the health hazards of their products, additional safety precautions and refinements are likely to be made.

However, the possibility of health hazards should be taken seriously. The best safeguards are an awareness of the problems and the use of common sense. Here are some specific suggestions:

Be sure your darkroom is well ventilated (McCann's booklet contains some good suggestions for types of exhaust fans). In particular, avoid small, unventilated closets when mixing chemicals and processing negatives and prints.

Read the safety warnings on the labels of all packages before proceeding to mix and use the chemicals.

Take special care when mixing dry chemicals. If you are using a badly ventilated darkroom, mix dry chemicals outside or near an open window. During the mixing process, keep your eyes, mouth and nose turned away from the chemicals.

Use concentrated liquid chemicals instead of dry chemicals whenever possible. The liquid chemicals are usually more expensive, but they are safer to handle.

Wear protective rubber gloves when handling chemicals and developing film, and use tongs when processing prints. If you do soak your hands in the solutions, be sure to wash them off immediately after each soaking.