CHIP MSDS COMPANION SHEET #10

CARBONLESS COPY PAPER
(NCR, "NO CARBON REQUIRED" PAPER)

This summary sheet may be used to identify to which class of chemicals your product belongs and what the product or its ingredients do. This information should assist you in comparing alternative products and identifying incomplete material safety data sheets. The health information below is intended for general information only.

TYPES OF PRESSURE SENSITIVE CARBONLESS PAPER and HOW THEY WORK:

■ Mechanical transfer: the undersurface of the top sheet is coated with a carbon paper-like film. When pressure is applied to the top surface, the colored ink is transfered to the top surface of the second sheet.

■ Chemical transfer: the color-forming chemicals are held on the undersurface of the top sheet of paper (called CB - coated back). Reacting materials are on the top surface of the second sheet (called CF - coated front) on which the copy will appear. Further copies are made by coating the subsequent sheets (called CFB - coated front and back). The color-formers are initially colorless and are dissolved in a solvent and then encapsulated in microscopic capsules (<10μ diameter). The capsules are in an emulsion which is spread and dried on the undersurface of the paper and held with a water-soluble starch. The surface pH of the finished paper is slightly alkaline (about 8.5). The top surface of the copy sheet contains a Montmorillonite clay (which is alkaline on the surface but acid inside) which is spread in a mixture, dried, and adhered with a styrene butadiene latex. When the paper is used in a typewriter or with a pen, the pressure breaks the microscapsules, the color-formers and solvent are absorbed into the clay mixture, and the color appears due to change in pH from the acid or by oxidation.

CHEMICAL COMPOSITION OF CARBONLESS COPY PAPER:

NCR paper by different manufacturers tend to vary as to the chemical composition of the solvent, color-formers, capsule wall material, or coreactant surface.

■ Solvents: The original NCR paper used PCBs; this practice was discontinued about 1970. Currently in use are hydrogenated terphenyls, di-arylethanes, alkylnaphthalenes, cyclohexane, and dibutylphthalate; sometimes these are diluted with odorless kerosene.

■ Color-formers; usually triphenyl and triaryl methane dyes, such as crystal violet lactone, benzoyl leucomethylene blue, fluoran derivatives, or malachite green lactone.

■ Capsule material: gelatin used with gum arabic; carboxymethyl cellulose combined with polyamides, polyesters, or polyurethanes.

BRAND NAMES and TRADEMARKS OF CARBONLESS COPY PAPER:

NCR paper
Autocopy
Transcript
G-copy
K-copy
SM 70
CCP Carbonless Action
Eurocalco
Kores Direct Copy
"Monoform"
Biplura
Carbonless copy paper
Copymate
Nashua
Readacopy
A-Copy
"Giroset"
Presstype
Pressure sensitive paper
Signal
Idem
Double EC copy
Sarrio carbonless
Transfer Receptive Paper
Korofax
Baron Self Copy
Novo-script paper

ADVERSE HEALTH EFFECTS ASSOCIATED WITH THE USE OF CARBONLESS COPY PAPER:

There are various symptoms associated with NCR paper use which usually begin some weeks after the first exposure. These include itching, dryness, or rashes of hands and forearms; itching and dryness of lips and eyes; swollen eyelids; redness of face; headache; and dizzy spells. Stronger symptoms have been experienced by individuals who licked the fingers repeatedly to separate and count papers, thereby ingesting the chemicals. These include drowsiness, anorexia, burning sensations on face, tingling of scalp, backache, thirst, aching pains in legs and thighs, or sore throat.

Many of the reported cases have found that their symptoms were related to periods of intensive work and the handling of large amounts of carbonless paper forms, whereas there were no symptoms when handling small quantities. Moreover, the paper manufacturing plant workers do not seem to experience these symptoms. It appears significant that all the complaints have been associated with used paper — suggesting that the rupture of the capsules containing the color-formers and solvent is important, even though only a small proportion of the capsules in any one sheet are actually broken. It has been suggested that the symptoms are induced by the encapsulated solvents, rather than the color-formers, which evaporated and were inhaled causing the respiratory symptoms. Some papers give off formaldehyde during handling and storage, which may be responsible for the eye and respiratory symptoms. Improved ventilation, especially for small offices, has helped alleviate symptoms. Also, the amount of formaldehyde emitted appears to be higher from fresh forms; indicating that the formaldehyde dissipates with time, depending upon the storage situation. Significant air concentrations of formaldehyde have been measured in filing cabinet drawers, where forms bave been separated and stored for over six months.

Patch tests to the NCR paper have generally been negative, which appears to implicate an irritant or toxic reaction rather than an allergic one. Although some of the chemicals used in this paper are allergenic, they tend to be extremely weak allergens which are rarely reported. Allergic contact dermatitis has been reported to the color-former paratoluene sulfinate of Michler's hydrol, which is not based upon nor derived from previously reported paper allergens. Since production personnel who manufacture this chemical have not reported allergic reactions, it would appear to have a low sensitizing capacity. Identification of an allergen would require patch testing of the affected individuals.

PROTECTION and PREVENTION:

- ❑ Use adequate ventilation in office area. Also ventilate paper storage and filing areas.
- ❑ Avoid ingesting carbonless paper chemicals by minimizing hand-to-mouth contact.
- ❑ Do not rub eyes when handling NCR paper.
- ❑ Select a paper of different chemical composition. However, note that even when different papers are purchased, files may still contain the former type of paper and thus handling of this material will continue.
- ❑ Substitute a mechanical-type for a chemical-type paper.
- ❑ Substitute carbon paper for carbonless copy paper.
- ❑ Avoid all contact with carbonless paper.

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