



INTERNAL CORRESPONDENCE

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JUL 21, 1978

T. W. CARMODY

CHEMICALS AND PLASTICS

270 PARK AVENUE, NEW YORK, NEW YORK 10017

To (Name) Operations Managers  
Market Area Managers  
Plant Managers  
R&D Directors  
Engineering Directors  
Distribution Directors

Date July 18, 1978

Originating Dept. SHARE - EP/OH

Floor Number 21

Answering letter date

cc: Attached Distribution List

Subject Updated C&P List of  
Potential Carcinogens

Attached is the up-to-date list of substances of interest to C&P which we have determined should be regarded as potential carcinogens and therefore handled accordingly. This replaces the previous list issued with our letter dated January 31, 1978. Several additions have been made, including certain chromium compounds and epoxy resins.

Permissible exposure limits and other information regarding these substances are contained in a separate detail document which will be sent to all Industrial Hygiene and Medical Departments, environmental protection and occupational health coordinators, technology managers, and other appropriate managers for all locations and functions. Others with a need to know may obtain a copy by contacting Dr. W. C. Kuryla, Technology Manager-Occupational Health, at the South Charleston Technical Center.

*E. Q. Hull*  
E. Q. Hull, M. D.

Medical Director  
Chemicals and Plastics

*A. E. Montagna*  
A. E. Montagna

Operations Manager  
Environmental Protection  
and Occupational Health  
Chemicals and Plastics

EQH/AEM/ad  
Attachment

69443

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Additional Distribution

|                   |                      |
|-------------------|----------------------|
| *C. R. Allenbach  | Niag. Falls (Metals) |
| *R. C. Andrews    | 322 (H&A)            |
| L. M. Baker       | 19                   |
| *F. D. Bess       | 511                  |
| *N. E. Bolton     | 4                    |
| *J. B. Browning   | 22                   |
| *T. J. Burke      | 781 (BP)             |
| *T. W. Carmody    | 22                   |
| *C. P. Carpenter  | Mellon               |
| R. G. Chenoweth   | 511                  |
| *R. J. Conkling   | 323 (Linde)          |
| *E. F. Cox        | Mellon               |
| *L. A. Crisorio   | 222                  |
| *J. M. Cwikla     | 358 (Film)           |
| *C. U. Dernehl    | 4                    |
| J. M. Fallon      | 21                   |
| *J. A. Fitzgerald | Jacksnvl. (APD)      |
| *N. W. Gaines     | 511                  |
| *W. F. Gorham     | 312 (98)             |
| *D. E. Gould      | 312 (Somvl.)         |
| *R. E. Graebert   | 511                  |
| *R. A. Hardison   | Parma (CPD)          |
| *H. L. Haynes     | 22                   |
| *D. L. Heywood    | 21                   |
| *E. R. Homan      | Mellon               |
| *J. C. Hovious    | 511                  |
| *R. A. Howard     | 44 (Elec.)           |
| *E. Q. Hull       | 511                  |
| *R. F. Jensen     | 323 (Linde)          |
| *J. B. Johnson    | 511                  |
| *R. G. Jordan     | OakRidge (Nuc.)      |
| *R. T. Kramer     | 512                  |
| *W. C. Kuryla     | 511                  |
| *T. A. Lincoln    | 22                   |
| *M. G. Manetti    | 46                   |
| *J. D. Martin     | 510                  |
| *A. E. Montagna   | 21                   |
| *O. P. Mukheja    | 440 (Toronto)        |
| *R. E. Peele      | 511                  |
| *E. A. Piersall   | 250 (Metals)         |
| *T. P. Raby       | 312 (51)             |
| *J. A. Ring       | 19                   |
| C. D. Schmidt     | 29                   |
| T. N. Tackett     | 10                   |
| *A. G. Voress     | 21                   |
| *G. W. Wainwright | 1200 (Geneva)        |
| *C. S. Weil       | Mellon               |
| *J. W. Whittlesey | 46                   |
| *R. C. Wise       | 21                   |
| *V. A. Yarborough | 44 (Devel.)          |
| R. L. Yelton      | 29                   |
| N. L. Zutty       | 29                   |

\*Additional detail document enclosed.

A. E. Montagna-7/18/78

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C&P OCCUPATIONAL HEALTH TEAM

LISTING OF POTENTIAL CARCINOGENS

JULY 1, 1978

|                                                                                     |                                                                                                       |                                                                                                                                                        |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2-Acetylaminofluorene                                                               | Ethylene Thiourea                                                                                     | 2-Nitropropane                                                                                                                                         |
| Acrylonitrile (a) (b)                                                               | 4-Dimethylaminoazobenzene                                                                             | Nitrosoamines (b)                                                                                                                                      |
| 4-Aminodiphenyl                                                                     | 1,4-Dioxane (a)                                                                                       | N-Nitrosodimethyl-amine (b)                                                                                                                            |
| Asbestos (a) (b)                                                                    | Epichlorohydrin (a)                                                                                   | Perchloroethylene (a)<br>(Tetrachloroethylene)                                                                                                         |
| Benzene (a) (b)                                                                     | Epoxy Resin ERL 2774 (a)<br>(Diglycidyl Ether of<br>Bisphenol A)                                      | Polychlorinated<br>Biphenols (b)                                                                                                                       |
| Benzidine                                                                           | Epoxy Resin ERL 4205 (a)<br>(Bis (2,3-Epoxy cyclopentyl)<br>Ether)                                    | Polycyclic Aromatic<br>Hydrocarbons (a) (b)<br>(Fuel Oil Residues;<br>Quench Oil, pitches;<br>tars, Dripolenes A,<br>B, and C, Resin B<br>Condensates) |
| Benzidine-Derived Dyes                                                              | Epoxy Resin ERL 4206<br>(Vinylcyclohexene<br>dioxide) (a)                                             | 8-Propiolactone                                                                                                                                        |
| Bis-2-chloroethyl ether<br>(Dichloroethyl<br>Ether: CHLOREX) (a)                    | Epoxy Resin ERL 4234<br>3-(3',4' - Epoxycyclohexyl)<br>8,9-epoxy-2,4-dioxaspiro<br>(5,5-undecane) (a) | Toluene-2,4-diamine (a)                                                                                                                                |
| Bis-2-chloroethyl-2-<br>naphthylamine                                               | Ethylene dibromide                                                                                    | Trichloroethylene (a)                                                                                                                                  |
| Bis-chloromethyl ether                                                              | Ethylene dichloride (a)                                                                               | Vinyl Chloride (a)                                                                                                                                     |
| Carbon tetrachloride (a)                                                            | Ethyleneimine<br>(Aziridine) (b)                                                                      |                                                                                                                                                        |
| Chloroform (a)                                                                      | Methyl chloromethyl ether                                                                             |                                                                                                                                                        |
| Chloroprene                                                                         | $\alpha$ -Naphthylamine (b)                                                                           |                                                                                                                                                        |
| Chromates of Lead & Zinc                                                            | $\beta$ -Naphthylamine                                                                                |                                                                                                                                                        |
| Chromium-6 Carcinogenic<br>Compounds (including<br>bis-Triphenyl Silyl<br>Chromate) | Neopentyl glycol<br>diacrylate (a)                                                                    |                                                                                                                                                        |
| 3,3' -Dichlorobenzidine<br>(and salts)                                              | Nickel, Inorganic (a)                                                                                 |                                                                                                                                                        |
| Diethyl sulfate (a)                                                                 | 4-Nitrodiphenyl                                                                                       |                                                                                                                                                        |
| Diisopropyl sulfate (b)                                                             |                                                                                                       |                                                                                                                                                        |
| Dimethyl sulfate                                                                    |                                                                                                       |                                                                                                                                                        |

UCC 100338

(a) C&P Product, Raw Material, or Process Intermediates

(b) Possible Contaminant in C&P products or operations

C/P OCCUPATIONAL HEALTH TEAM  
LISTING OF POTENTIAL CARCINOGENS

Page 1 of 6

| SUBSTANCE                                                    | CATEGORIES* | EXPOSURE LIMITS           |                                   |                                                           |
|--------------------------------------------------------------|-------------|---------------------------|-----------------------------------|-----------------------------------------------------------|
|                                                              |             | ACGIH TLV                 | NIOSH PROPOSAL OR OSHA STANDARD** | C/P STANDARD OR GUIDELINE                                 |
| 2-Acetylaminofluorene                                        | CX          |                           | NE (c)                            | NE; cf Regulation 29 CFR 1910.1014                        |
| Acrylonitrile***                                             | A           | 20 ppm                    | 2 ppm (d)                         | 2 ppm                                                     |
| 4-Aminodiphenyl                                              | AX          | NE                        | NE (c)                            | NE; cf Regulation 29 CFR 1910.1011                        |
| Asbestos***                                                  | AX          | 5 fibers/cc<br>> 5µm long | 2 fibers/cc (c)<br>> 5 µm long    | 2 fibers/cc > 5 µm long<br>cf Regulation 29 CFR 1910.1001 |
| Benzene***                                                   | AX          | 10 ppm                    | 1 ppm (c)                         | 1 ppm; NSOOC<br>cf Regulation 29 CFR 1910.1028            |
| Benzidine                                                    | AX          | NE                        | NE (c)                            | NE; cf Regulation 29 CFR 1910.1010                        |
| Benzidine-Derived Dyes                                       | C           | ---                       | ---                               | NE (Hull, 4/12/78)                                        |
| Bis-2-chloroethyl ether<br>(Dichloroethyl Ether: CHLOREX)*** | C           | 5 ppm                     |                                   | 0.1 ppm                                                   |

\*  
A = Known Human Carcinogen  
B = Suspected Human Carcinogen  
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\*\*\*  
C and P  
Product,  
Raw  
Material  
or  
Process  
Intermediate

\*\*  
a = NIOSH Criteria Document  
b = NIOSH Alert  
c = OSHA Permanent Standard  
d = OSHA Emergency Temporary Standard

\*\*\*\* Possible contaminant in C and P products or processes

NSOOC = No skin or oral contact  
NE = No exposure or contact by any route

C/P OCCUPATIONAL HEALTH TEAM  
LISTING OF POTENTIAL CARCINOGENS

Page 2 of 6

| SUBSTANCE                                                                     | CATEGORIES* | EXPOSURE LIMITS                |                                   |                                    |
|-------------------------------------------------------------------------------|-------------|--------------------------------|-----------------------------------|------------------------------------|
|                                                                               |             | ACGIH TLV                      | NIOSH PROPOSAL OR OSHA STANDARD** | C/P STANDARD OR GUIDELINE          |
| Bis-2-chloroethyl-2-naphthylamine                                             | A           |                                |                                   | NE                                 |
| Bis-chloromethyl ether                                                        | AX          | 1 ppb                          | NE (c)                            | NE; cf Regulation 29 CFR 1910.1008 |
| Carbon tetrachloride***                                                       | C           | 10 ppm                         | 2 ppm (b) 10 ppm (c)              | 2 ppm                              |
| Chloroform***                                                                 | C           | 10 ppm                         | 2 ppm (a) 50 ppm (c)              | 2 ppm                              |
| Chloroprene                                                                   | B           | 25 ppm                         | 1 ppm (b) 25 ppm (c)              | 1 ppm                              |
| Chromates of Lead and Zinc (as Cr)                                            | B           | 0.05 mg/m <sup>3</sup> (as Cr) | ---                               | 0.05 mg/m <sup>3</sup> (as Cr)     |
| Chromium-6 Carcinogenic Compounds (Including Bis-Triphenyl Silyl Chromate***) | B           | ---                            | 1 µg/m <sup>3</sup>               | 1 µg/m <sup>3</sup>                |
| 3-3'-Dichlorobenzidine (and salts)                                            | CX          |                                | NE (c)                            | NE; cf Regulation 29 CFR 1910.1007 |
| Diethyl sulfate***                                                            | C           |                                |                                   | 1 ppm; NSOOC                       |

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\*\*

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C/P OCCUPATIONAL HEALTH TEAM  
LISTING OF POTENTIAL CARCINOGENS

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| SUBSTANCE                                                                                         | CATEGORIES* | EXPOSURE LIMITS |                                   |                                    |
|---------------------------------------------------------------------------------------------------|-------------|-----------------|-----------------------------------|------------------------------------|
|                                                                                                   |             | ACGIH TLV       | NIOSH PROPOSAL OR OSHA STANDARD** | C/P STANDARD OR GUIDELINE          |
| Diisopropyl sulfate****                                                                           | C           |                 |                                   | 1 ppm; NSOOC                       |
| Dimethyl sulfate                                                                                  | C           | 1 ppm           |                                   | 1 ppm; NSOOC                       |
| 4-Dimethylaminoazobenzene                                                                         | CX          |                 | NE (c)                            | NE; cf Regulation 29 CFR 1910.1015 |
| 1,4-Dioxane***                                                                                    | C           | 50 ppm          | 1 ppm (a)                         | cf letter Hull/Montagna, 12/16/77  |
| Epichlorohydrin***                                                                                | C           | 5 ppm           | 2 mg/m <sup>3</sup> (a) 5 ppm (c) | 0.5 ppm                            |
| Epoxy Resin ERL 2774***<br>(Diglycidyl Ether of Bisphenol A; 2,2-Bis(p-Glycidyloxyphenyl)propane) | C           | ---             | ---                               | To be determined, NSOOC            |
| Epoxy Resin ERL 4205***<br>(Bis(2,3-Epoxypropyl)Ether)                                            | C           | ---             | ---                               | To be determined, NSOOC            |

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WCK/7-1-78

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C/P OCCUPATIONAL HEALTH TEAM  
LISTING OF POTENTIAL CARCINOGENS

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| SUBSTANCE                                                                                   | CATEGORIES* | EXPOSURE LIMITS |                                   |                                    |
|---------------------------------------------------------------------------------------------|-------------|-----------------|-----------------------------------|------------------------------------|
|                                                                                             |             | ACGIH TLV       | NIOSH PROPOSAL OR OSHA STANDARD** | C/P STANDARD OR GUIDELINE          |
| Epoxy Resin ERL 4206***<br>(Vinylcyclohexene dioxide)                                       | C           | 10 ppm          |                                   | 10 ppm; NSOOC                      |
| Epoxy Resin ERL 4234***<br>3-(3',4'-Epoxy cyclohexyl)8,9-epoxy-2,4-dioxaspiro(5,5-undecane) | C           |                 |                                   | 1 ppm; NSOOC                       |
| Ethylene dibromide                                                                          | C           | 20 ppm          | 1 mg/m <sup>3</sup> (a)           | 0.1 ppm                            |
| Ethylene dichloride***                                                                      | C           | 50 ppm          | 5 ppm (a)                         | 5 ppm                              |
| Ethyleneimine****<br>(Aziridine)                                                            | CX          |                 | NE (c)                            | NE; cf Regulation 29 CFR 1910.1012 |
| Ethylene Thiourea                                                                           | C           | ---             | ---                               | NE (Hull, 4/12/78)                 |
| Methyl chloromethyl ether                                                                   | AX          |                 | NE (c)                            | NE; cf Regulation 29 CFR 1910.1006 |
| α-Naphthylamine****                                                                         | BX          |                 | NE (c)                            | NE; cf Regulation 29 CFR 1910.1004 |

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C/P OCCUPATIONAL HEALTH TEAM  
LISTING OF POTENTIAL CARCINOGENS

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| SUBSTANCE                                  | CATEGORIES* | EXPOSURE LIMITS |                                                                  |                                              |
|--------------------------------------------|-------------|-----------------|------------------------------------------------------------------|----------------------------------------------|
|                                            |             | ACGIH TLV       | NIOSH PROPOSAL OR OSHA STANDARD**                                | C/P STANDARD OR GUIDELINE                    |
| $\beta$ -Naphthylamine                     | AX          | NE              | NE (c)                                                           | NE; cf Regulation 29 CFR 1910.1009           |
| Neopentyl glycol*** diacrylate             | C           |                 |                                                                  | NSOOC                                        |
| Nickel, Inorganic***                       | B           |                 | 15 $\mu\text{g}/\text{m}^3$ (a);<br>1 $\text{mg}/\text{m}^3$ (c) | 1 $\text{mg}/\text{m}^3$ ; cf 29 CFR 1910.93 |
| 4-Nitrodiphenyl                            | AX          | NE              | NE (c)                                                           | NE; cf Regulation 29 CFR 1910.1003           |
| 2-Nitropropane                             | C           | 25 ppm          | NE (b)                                                           | 1 ppm; Peele Letter 6-30-77                  |
| Nitrosoamines****                          | C           |                 |                                                                  | NSOOC                                        |
| N-Nitrosodimethylamine****                 | CX          |                 | NE (c)                                                           | NE; cf Regulation 29 CFR 1910.1016           |
| Perchloroethylene*** (Tetrachloroethylene) | C           | 100 ppm         | 50 ppm (a)<br>100 ppm (c)                                        | 50 ppm                                       |

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| SUBSTANCE                                                                                                                       | CATEGORIES* | EXPOSURE LIMITS                                                  |                                                                 |                                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------|-------------|------------------------------------------------------------------|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------|
|                                                                                                                                 |             | ACGIH TLV                                                        | NIOSH PROPOSAL OR OSHA STANDARD**                               | C/P STANDARD OR GUIDELINE                                                                   |
| Polychlorinated Bi-phenyls ****                                                                                                 | B, C        | 1 mg/m <sup>3</sup><br>42% Cl<br>0.5 mg/m <sup>3</sup><br>54% Cl | 1 µg/m <sup>3</sup> (b);<br>0.5 mg/m <sup>3</sup> (c)<br>54% Cl | 1 ug/m <sup>3</sup>                                                                         |
| β-Propiolactone                                                                                                                 | CX          |                                                                  | NE (c)                                                          | NE; cf Regulation 29 CFR 1910.1013                                                          |
| Polycyclic Aromatic*** Hydrocarbons (Fuel Oil Residues; Quench Oil, pitches, tars, Dripolenes A, B, and C. Resin B Condensates) | A           | 200 µg/m <sup>3</sup>                                            |                                                                 | cf letters Hull/Guest, 3/3/75<br>Hull/Montagna, 10/76<br>Hull/Montagna, 12/21/77<br>} NSOOC |
| Toluene-2,4-diamine***                                                                                                          | C           |                                                                  |                                                                 | 0.1 ppm; NSOOC (Olin)                                                                       |
| Trichloroethylene***                                                                                                            | C           | 100 ppm                                                          | 100 ppm TWA (a);<br>100 ppm 8 hr TWA (c)                        | 25 ppm (Hull/Montagna, 3/11/78)                                                             |
| Vinyl chloride***                                                                                                               | AX          |                                                                  | 1 ppm (c)                                                       | 1 ppm; cf Regulation 29 CFR 1910.1017                                                       |

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