



**Shell Oil Company • Shell Chemical Company**

Interoffice Memorandum

MAY 11, 1987

FROM: A.F. SCHMIT, STAFF INDUSTRIAL HYGIENIST, HEALTH & SAFETY  
DEER PARK MANUFACTURING COMPLEX

TO: DISTRIBUTION LIST (HOLDERS OF HAZCOM BOOKS)

SUBJECT: DPMC EXPOSURE GUIDELINES

Attached please find updated copies of the DPMC Exposure Guidelines. These should be placed in the red Hazcom books and the old copy discarded. We have attached enough copies, according to our records, for the number of hazcom books you maintain. If additional copies are needed please call Marilyn Dickson at extension 7335.

  
A.F. Schmit

AFS/md

Attachments

cc: ECB Satellite  
AFS Chron

LAM 013662

CHBT8713102

DPMC-14952

DPMC EXPOSURE GUIDELINE

PREPARED BY THE INDUSTRIAL  
HYGIENE DEPARTMENT  
APRIL 1987

LAM 013663

CHBT8710301

DPMC-14953

## DPMC INDUSTRIAL HYGIENE EXPOSURE GUIDELINES

APRIL, 1987

### Basis

Acceptable levels of employee exposure to chemical substances have been established in recent years by various regulatory and scientific groups. This includes the Occupational Safety and Health Administration, (OSHA); the American Conference of Governmental Industrial Hygienists, (ACGIH); and the National Institute for Occupational Safety and Health (NIOSH). Recommendations on acceptable levels of employee exposure for individual chemical substances often vary between these groups due to 1) differences in data interpretation, or 2) a review of new health hazard information not previously considered. Where existing acceptable limits of exposure are determined to be inadequate, Shell may establish a Shell Internal Limit, for example, epichlorohydrin.

To provide an updated listing of recommended acceptable limits of employee exposure, the attached summary of "DPMC Exposure Guidelines" was prepared.

DPMC Exposure Guidelines represent target control levels for employee protection. At the minimum, precautionary workpractices, respiratory protection and where indicated protective clothing should be used to reduce exposure to or below the DPMC Exposure Guideline. For many chemical substances, two guidelines have been set 1) a short term @ 15 minutes and 2) an 8 hour TWA.

DPMC Exposure Guidelines reflect reasonably current health hazard and toxicological information and will be updated annually. DPMC Exposure Guidelines are as strict as those established by OSHA and incorporate Shell Internal Limits where these have been established. Guidelines have been established for those substances with greater exposure potential or in more frequent use.

### Respiratory Protection

For each DPMC Exposure Guideline listed, the minimum type of respiratory protection recommended for use has been identified. Respirators affording a higher level of protection may be used if determined to be appropriate, e.g. a full-face mask may be used to avoid eye irritation instead of a half facepiece; an air supplied respirator may be used instead of a cartridge respirator, etc.

### Protective Clothing

Certain chemical substances have the capacity to cause a toxic effect by being absorbed through the skin. This may occur with or without any local skin effect (reddening, rash, burn, etc). Of those substances which can be absorbed, the capacity or rate in which absorption will occur may vary significantly (slightly, moderately, readily absorbed). Each chemical substance reported to have this capacity has been identified on the listing of DPMC Exposure Guidelines. It is generally recommended that uncontaminated PVC gloves be used for protection against chemical substances which may be absorbed through the skin.

**LAM 013664**

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DPMC-14954

#### ABBREVIATIONS USED

|                             |                                                                                                                                                             |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A.C.G.I.H.                  | American Conference of Governmental Industrial Hygienists - A professional standard setting organization.                                                   |
| A.M. Cartridge              | Ammonia Respirator Cartridge                                                                                                                                |
| E.N.T.                      | Eyes, Nose and Throat.                                                                                                                                      |
| Health Data and Comments    | Basic information concerning known toxicity is presented without regard to exposure level, frequency of exposure required to cause health effect, etc.      |
| mg/m <sup>3</sup>           | Milligram dust per cubic meter of air (weight/volume).                                                                                                      |
| NIOSH                       | The National Institute for Occupational Safety and Health. This is the research branch of OSHA located under H.E.W.                                         |
| O.V. Cartridge              | Organic Vapor Cartridge - Black in color.                                                                                                                   |
| ppm                         | Parts Per Million (Volume/Volume) - Usually used for gases and vapors.                                                                                      |
| STEL                        | Short Term Exposure Limit - Generally referred to as the upper exposure level allowed over a short duration.                                                |
| Suspect Embryo fetus hazard | Toxicity information and exposures to this chemical are currently being reviewed; has not yet been categorized under the Shell Embryo-Fetus Hazard Program. |
| TWA                         | Time-Weighted Average - The usual term referred to for 8 hour exposures.                                                                                    |
| 3M 9920                     | Disposable 3M welding fume respirator which is suitable for some fumes and welding circumstances                                                            |
| I.D.L.H.                    | Immediately Dangerous to Life or Health - maximum concentration which would permit escape within a 30 minute period.                                        |

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DPMC-14955

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**LAM 013669**

## DPMC EXPOSURE GUIDELINES

| SUBSTANCE | DPMC GUIDELINES |      |       | ODOR THRESHOLD | IDLH | MINIMUM RESPIRATOR SELECTION<br>(Requirements) | HEALTH DATA AND COMMENTS |
|-----------|-----------------|------|-------|----------------|------|------------------------------------------------|--------------------------|
|           | TWA             | STEL | UNITS |                |      |                                                |                          |

## A Section

|                                        |                |        |     |      |        |                                                                                                         |                                                                                                                                                                                                   |
|----------------------------------------|----------------|--------|-----|------|--------|---------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Acetone                                | 750.0          | 1000.0 | ppm | 32.5 | 20,000 | Above 750 ppm & up to 1000 ppm half-face mask w/black dual organic vapor cartridge.                     | Mild ENT irritant at conc. below 1000 ppm; may be narcosis producing above 1000 ppm.                                                                                                              |
| Acetonitrile                           | 40.0           | 60.0   | ppm | 39.8 | 4,000  | Above 40 ppm & up to 400 ppm half-face mask w/yellow dual O.V. acid gas cartridge.                      | Colorless liquid. Acute toxicity due to cyanide, ether-like odor detected 40-170 ppm. Skin absorption possible. Possible respiratory tract effects. Hydrogen cyanide gas may be formed in a fire. |
| Acetophenone<br>(Phenyl Methyl Ketone) | None Available |        | ppm | <1.0 |        | Full facepiece mask w/dual black O.V. cartridges for anticipated exposure to vapors of heated material. | Skin irritation, mild burns and transient eye injury possible. Persistent pleasant sweet, almond odor colorless liquid. Low acute toxicity but potentially narcotic at high concentrations.       |

LAM 013670

## DPMC EXPOSURE GUIDELINES

| SUBSTANCE            | DPMC GUIDELINES |      |                   | ODOR THRESHOLD | IDLH  | MINIMUM RESPIRATOR SELECTION<br>(Requirements)                                 | HEALTH DATA AND COMMENTS                                                                |
|----------------------|-----------------|------|-------------------|----------------|-------|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|                      | TWA             | STEL | UNITS             |                |       |                                                                                |                                                                                         |
| Acrolein             | 0.1             | 0.3  | ppm               | 0.1            | 5.0   | Above 0.1 ppm & up to 1 ppm full-face mask w/dual 0.V. black cartridges.       | Vapors extremely irritating at 0.3-1.0 ppm. Skin absorption <u>possible</u> .           |
| Allyl Chloride       | 1.0             | 2.0  | ppm               | 0.21           | 300.0 | Above 1 ppm & up to 10 ppm half-face mask w/dual 0.V. black cartridge.         | Unpleasant pungent odor. Possible liver and kidney effects.                             |
| Allyl Glycidyl Ether | 5.0             | 10.0 | ppm               | 10.0           | 270.0 | Above 5 ppm & up to 50 ppm half-face mask w/black dual 0.V. cartridge.         | Skin absorption <u>possible</u> . Eye, nose, throat & resp. irritant.                   |
| Aluminum Metal Dust  | 10.0            | -    | mg/m <sup>3</sup> | -              | -     | Disposable 3M 9920 mask for operations which may exceed 10 mg/m <sup>3</sup> . | Considered an inert or nuisance dust.                                                   |
| Aluminum Metal Fumes | 5.0             | -    | mg/m <sup>3</sup> | -              | -     | Disposable 3M 9920 mask for operations which may exceed 5 mg/m <sup>3</sup> .  |                                                                                         |
| Ammonia              | 25.0            | 35.0 | ppm               | 21.4           | 500.0 | Above 25 ppm & up to 250 ppm full-face mask w/green dual cartridge.            | Marked E.N.T. irritant; irritating at 50 ppm. Skin burns may occur with liquid contact. |

LAM 013671

DPMC-14961

CHBT8710301

## DPMC EXPOSURE GUIDELINES

| SUBSTANCE                                                                                                  | DPMC GUIDELINES |      |                   | ODOR THRESHOLD | IDLH   | MINIMUM RESPIRATOR SELECTION<br>(Requirements)                                                                            | HEALTH DATA AND COMMENTS                                                              |
|------------------------------------------------------------------------------------------------------------|-----------------|------|-------------------|----------------|--------|---------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                                                                                                            | TWA             | STEL | UNITS             |                |        |                                                                                                                           |                                                                                       |
| Aniline                                                                                                    | 2.0             | 5.0  | ppm               | 1.0            | 100.0  | Above 2 ppm & up to 20 ppm half-face mask w/dual 0.V. black cartridge.                                                    | Skin absorption possible. Causes blood effects, headaches, dizziness, etc.            |
| Asbestos                                                                                                   | 0.2             | -    | Fibers per cc     | -              | -      | Up to 2.0 f/cc half-face mask with dual HEPA (purple cartridges for asbestos related work (removal, cutting, demolition). | Recognized lung carcinogen; may also cause asbestosis (lung scarring).                |
| Asphalt Fumes (mineral pitch, petroleum pitch, mixture of polycyclic aromatic and paraffinic hydrocarbons) | 5.0             | 10.0 | mg/m <sup>3</sup> | -              | -      | Half-face mask w/dual black 0.V. cartridge & dust covers for operations which may exceed 5 mg/m <sup>3</sup> .            | Respiratory & skin irritant; contact can cause acne-like sores or dermatitis.         |
| B Section                                                                                                  |                 |      |                   |                |        |                                                                                                                           |                                                                                       |
| Benzene                                                                                                    | 10.0            | -    | ppm               | 2.14           | 2000.0 | Above 10 ppm & up to 50 ppm half-face mask with dual 0.V. black cartridge.                                                | Skin absorption possible; Suspect human carcinogen. Category "A" Embryo Fetus hazard. |

LAM 013672



**Shell Oil Company • Shell Chemical Company**  
Interoffice Memorandum

720

MAY 26, 1987

FROM: A. F. SCHMIT, STAFF INDUSTRIAL HYGIENIST, HEALTH & SAFETY  
DEER PARK MANUFACTURING COMPLEX

TO: DPMC EXPOSURE GUIDELINE DISTRIBUTION LIST

SUBJECT: DPMC EXPOSURE GUIDELINE UPDATE

Please replace pages 4 and 24 in the recently updated Exposure Guidelines with the attached corresponding pages. The DPMC exposure guidelines for 1,3-butadiene were inadvertently changed.

A handwritten signature in cursive script that reads "A. F. Schmit".

A. F. Schmit

Attachments

cc: AFS Chron  
ECB Satellite

**LAM 013673**

CHBT8714605

DPMC-14963

DPMC EXPOSURE GUIDELINES

| SUBSTANCE        | TWA   | DPMC GUIDELINES<br>STEL | UNITS             | ODOR<br>THRESHOLD | IDLH   | MINIMUM RESPIRATOR<br>SELECTION<br>(Requirements)                                                          | HEALTH DATA<br>AND COMMENTS                                                                                      |
|------------------|-------|-------------------------|-------------------|-------------------|--------|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| Bisphenol A(BPA) | 5.0   | -                       | mg/m <sup>3</sup> |                   |        | Disposable 3M 9920 dust mask for operations which may exceed 5 mg/m <sup>3</sup> e.g., debagging, cleanup. | Considered an irritant dust; possible skin sensitization.                                                        |
| 1,3 Butadiene    | 25.0  | -<br>DPMC Guideline     | ppm               | 1.1               | 20,000 | Above 25 ppm & up to 100 ppm half-face mask with black O.V. cartridge.                                     | Moderate irritant to eyes, nose and throat.<br>Narcosis producing at high concentrations.<br>Suspect carcinogen. |
| n-Butyl Alcohol  | 100.0 | -                       | ppm               | 1.0               | 8,000  | Above 100 ppm & up to 1000 ppm half-face mask with dual O.V. black cartridges.                             | Skin absorption possible.<br>Reported effect on hearing ability.                                                 |
| Butane           | 800.0 | -                       | ppm               | 5,000             | -      | Above 800 ppm airline respirator required.                                                                 |                                                                                                                  |

DPMC-14964

LAM 013674

CHBT8710301

## DPMC EXPOSURE GUIDELINES

| SUBSTANCE                              | OSHA    |             | 1987 ACGIH                 |          | SHELL DPMC GUIDELINES |        | UNITS             |
|----------------------------------------|---------|-------------|----------------------------|----------|-----------------------|--------|-------------------|
|                                        | PEL-TWA | PEL-CEILING | TLV-TWA                    | TLV-STEL | TWA                   | STEL   |                   |
| Acetone                                | 1,000.0 | -           | 750.0                      | 1,000.0  | 750.0                 | 1000.0 | ppm               |
| Acetonitrile                           | 40.0    | -           | 40.0                       | 60.0     | 40.0                  | 60.0   | ppm               |
| Acetophenone<br>(Phenyl Methyl Ketone) | -       | -           | -                          | -        | -                     | -      | -                 |
| Acrolein                               | 0.1     | -           | 0.1                        | 0.3      | 0.1                   | 0.3    | ppm               |
| Allyl Chloride                         | 1.0     | -           | 1.0                        | 2.0      | 1.0                   | 2.0    | ppm               |
| Allyl Glycidyl Ether                   | -       | 10.0        | 5.0                        | 10.0     | 5.0                   | 10.0   | ppm               |
| Aluminum Metal Dust<br>Fume            | 15.0    | -           | 10.0                       | -        | 10.0                  | -      | mg/m <sup>3</sup> |
|                                        | -       | -           | 5.0                        | -        | 5.0                   | -      | mg/m <sup>3</sup> |
| Ammonia                                | 50.0    | -           | 25.0                       | 35.0     | 25.0                  | 35.0   | ppm               |
| Aniline                                | 5.0     | -           | 2.0                        | -        | 2.0                   | 5.0    | ppm               |
| Asbestos                               | 0.2     | -           | 0.2                        | -        | 0.2                   | -      | f/cc              |
| Asphalt Fumes                          | -       | -           | 5.0                        | 10.0     | 5.0                   | 10.0   | mg/m <sup>3</sup> |
| Benzene                                | 10.0    | 25.0        | 10.0                       | 25.0     | 10.0                  | -      | ppm               |
| Bisphenol A (BPA)                      | -       | -           | See Total<br>Nuisance Dust | -        | 5.0<br>(total wt.)    | -      | mg/m <sup>3</sup> |
| 1,3-Butadiene                          | 1,000.0 | -           | 10.0                       | -        | 25.0                  | -      | ppm               |

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DPMC-14951