



**DENVER**  
THE MILE HIGH CITY

**CITY AND COUNTY OF DENVER**

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**DENVER FIRE  
PREVENTION DIVISION**

**INSTRUCTIONS FOR  
HAZARDOUS MATERIALS  
REGULATION AND  
PERMITTING**

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## I. SCOPE

Operators of facilities that use, handle, produce, store, or dispense materials with hazardous properties regulated by the 2009 International Fire and Building Codes as amended by the City and County of Denver (**IFC** and **IBC**, respectively; the **code** or **codes** collectively) are required to develop and maintain management and action plans to document the distribution and organization of these materials within their facility and facilitate the appropriate course of action in the event of a related incident. Please note in these instructions the term “HazMat” is applicable to specific hazardous products regulated by the codes (e.g., liquefied petroleum gas, ammunition, batteries, etc.) along with hazardous physical or health properties of materials regulated by the codes (e.g., corrosive, flammable, etc.) and in both cases include use, handling, production, storage, dispensing, etc., operations.

The intent of these plans is to assure occupants and neighbors of facilities with HazMat that the code regulations with respect to life-safety are identified and enforced, and to provide emergency personnel readily accessible information on which to organize and execute an appropriate response. Key components are a report documenting the HazMat inventory, emergency contacts, and the facility description called a Hazardous Materials Report (HMR) and a package of graphics depicting the facility layout including access and egress points, HazMat areas, and emergency equipment locations called a Hazardous Materials Management Plan (HMMP). The HMR in conjunction with the HMMP are used to consolidate the necessary information and substantiate facility compliance.

An accurate, up-to-date HMR, available for review upon request by the Fire Code Official (**FCO**), is required for every facility with HazMat. Depending on the quantities and hazard levels, simply maintaining an accurate HMR on site may be all that’s necessary. Facilities with larger quantities of HazMat or materials with higher hazards may be required to obtain annual permits and inspections, and some may have to be certified as a division of the Hazardous (“H”) Occupancy Group classification per the IBC – possibly necessitating specialized construction and hazard-mitigation features, systems, and components.

These instructions are provided to give facility operators an overview of the HazMat requirements in the codes, an understanding of the municipal HazMat regulations, and detailed directions on completing and submitting the City and County of Denver’s HazMat reporting documents.

Please note the Fire Prevention Division (**FPD**) of the Denver Fire Department (**DFD**) reserves the authority to mandate HMR’s be prepared by entities with demonstrated competency in this area. While this is typically only invoked for large or complex inventories, in the interest of timely correctness and completeness it may be required for any facility.

## II. **DOCUMENT OVERVIEW**

There are a number of HazMat planning and auditing documents referenced in the IFC and by FPD. Depending on the complexity of the facility, materials, processes, and unique circumstances involved, any or all of these could be required:

- Hazardous Materials Permit Application (**HMPA**)

- Hazardous Materials Report (**HMR**)
- Hazardous Materials Inventory Statement (**HMIS**)
- Hazardous Materials Management Plan (**HMMP**)
- Emergency Action Plan (**EAP**)
- Facility Closure Plan (**FCP**)

In addition, Tier 2 reporting may be required for facilities with very large amounts of certain materials under the federal Superfund Amendments and Reauthorization Act (SARA) Title 3, aka “Emergency Planning and Right to Know Act of 1986”; see:

<http://www.cdphe.state.co.us/oeis/sara/index.html>.

#### **A. Hazardous Materials Permit Application (HMPA)**

The term HMPA is applied to include both the process of submitting data to acquire a HazMat Operational Permit (or substantiate one is not required) and the formal set of documents ultimately submitted. The final package of information submitted under the HMPA umbrella may be as simple as a single letter stating no hazardous materials are present or complex enough to include all of the documents listed above.

The HMPA is used to evaluate HazMat quantities, facility layouts, methods of storage, manner of use, and the hazardous nature of the commodities involved for compliance with the IFC, IBC, National Fire Protection Association (NFPA), and municipal requirements. The HMPA also includes contact information saving valuable time in emergency and non-emergency events. The HMPA has to be completed by a qualified individual who is familiar with hazardous materials regulations in general and the code regulations specifically applicable to the relevant facility.

A request for an HMPA is typically made via renewal notice but may also be initiated by a construction permit application review, a DFD company-level referral, an outside agency or citizen concern, a business license application, an operational permit renewal other than HazMat, or an emergency incident.

The HMPA process nominally takes place in two steps. An initial set of data is submitted that is relatively small in scope and used to determine whether a subsequent, more comprehensive set of data is needed. The initial submittal is either a letter signed by the facility operator attesting no HazMat is present in the facility (see Section IV.A.2 of these instructions) – OR – an HMR (see Section IV.B of these instructions) containing only the minimum data necessary to process it. Once the initial submittal is processed, direction will be provided to the applicant regarding whether a second step is necessary and if so, what documentation it encompasses.

Upon successfully addressing all issues identified during the review of the HMPA, a HazMat Operational Permit – or formal acknowledgement one is not required – is issued authorizing the performance of specific HazMat-related operations. The permit constitutes permission to handle, dispense, produce, store, or use HazMat, and to conduct operations and install equipment possessing or potentially creating conditions hazardous to life or property. It is renewed annually and customized for each facility. Note the operational permit may be

suspended or revoked if issued in error or in violation of an ordinance, regulation or code. False statements or misrepresentation of information may result in a criminal complaint being issued (see IFC Section 109).

## **B. Hazardous Materials Report (HMR)**

The HMR is a consolidated description of a facility and the HazMat therein. It provides FCO's and emergency responders a contact list, a code-based description of the building and adjacent outdoor areas, and an inventory of the hazards they should expect to find. Aggregate sheets for operational permit issuance and HazMat Area evaluation sheets are generated in the HMR based on the information provided by the applicant.

In Denver, the HMR is a 2007 Microsoft Excel workbook consisting of 4 input worksheets: *Contacts*, *Building*, *HazMat\_Areas*, and *HMIS* (see Section III.B of these instructions for a discussion of HazMat Areas; see Section V.A of these instructions for detailed directions on completing the HMR).

### **1. Hazardous Materials Inventory Statement (HMIS)**

The HMIS (see IFC Section 2701.5.2 and Section V.A.4 of these instructions) is one worksheet in the HMR and contains a list of all the HazMat in a facility along with the corresponding quantities, properties (both IFC and NFPA 704), locations, and Chemical Abstract Service (**CAS**) numbers.

## **C. Hazardous Materials Management Plan (HMMP)**

HMMPs (see IFC Section 2701.5.1 and Section V.B of these instructions) are used to facilitate emergency tactical preplanning of Group H occupancies and in conjunction with the HMR, not only assist the Fire Department, they also help facility operators both during normal reviews and emergency incidents.

The primary components of the HMMP are site maps and facility floor plans identifying HazMat locations and site and building features relevant to the management of HazMat inventories and processes.

## **D. Emergency Action Plan (EAP)**

FPD combines the plans identified as the *Fire Safety Plan (FSP)* and the *Fire Evacuation Plan (FEP)* in the IFC into the EAP (see IFC Section 404) – sometimes referred to as the *Emergency Response Plan (ERP)*.

The fire safety portion focuses on the overall understanding of the building fire protection systems (active and passive) with respect to the layout, contents, means of egress, and fire hazards in the building. The primary focus of the evacuation portion is preparing for and defining the roles for occupant evacuation and relocation during an emergency.

### **E. Facility Closure Plan (FCP)**

The FCP (see IFC Section 2701.6.3) is used to document the timetable for the proper transportation, disposal or other approved re-use of all HazMat at the facility. It is important to note this could include any contaminated soil in the area.

## **III. PERMITTING PROCESS**

### **A Regulation Limits**

Regulation limits are quantity thresholds of HazMat at which regulations and permit requirements change. “Quantities” are the aggregate quantities of the hazardous properties of HazMat inside or outside of a building, as well as aggregate quantities of some specific materials regulated by the codes. It’s important to note even though some materials are specifically regulated (e.g., liquefied petroleum gas, aerosols, batteries, etc.), most materials are regulated by the nature of the physical and health hazards they pose (e.g., flammable, corrosive, toxic, etc.).

There are two regulated quantity limits: Permit Amounts per facility (indoor and outdoor) and Maximum Allowable Quantities (MAQs) per HazMat Area (note the broader term “HazMat Area” is used by FPD to include Control Areas as well as Hazardous Occupancies, tank storage areas, battery charging areas, etc. – see Section III.B of these instructions for further clarification).

Permit Amounts of HazMat are identified in Section 105.6 of the Denver amendments to the IFC and reproduced for convenience in Appendix C of these instructions. These are the quantities at which an FPD operational permit is required. It’s important to note permit amounts are based on the total aggregate quantities inside and outside the facility regardless of how many HazMat Areas are present. Operational permits provide an annual opportunity for facility operators to verify with FPD personnel the operational use (including storage) of HazMat in and around their facilities remains in compliance.

MAQ is defined in IFC Section 2702 as, “The maximum amount of a hazardous material allowed to be stored or used within a Control Area inside a building or an outdoor Control Area. The maximum allowable quantity per Control Area is based on the material state (solid, liquid, or gas) and the material storage or the use conditions.” MAQs are tabulated in IFC Section 2703.1.1, Tables 1-4 and reiterated in IBC Section 307.1, Tables 1 and 2..

The codes provide several mechanisms to increase the tabulated MAQs. When a compliant fire suppression system is installed throughout the building, the MAQs for the majority of hazards are doubled. Likewise, the MAQs for most of the hazards stored in approved, specialized or fire-rated cabinets are also doubled (see IFC Sections 2703.8.7 and 2703.8.7). And for most hazards, these two mechanisms are permitted to be compounded so the nominal MAQs may be increased by a factor of four in a single HazMat Area without being considered a Hazardous Occupancy.

Finally, a facility is also permitted to have several HazMat Areas with up to the MAQs in each without being considered a Hazardous (or “H”) Occupancy; i.e., quantities (including the increases described above) of all regulated HazMat in all three states (solid, liquid, and gas) and in all three use categories (storage, use in an open system, and use in a closed system) are permitted in a single HazMat Area without having to designate the facility an H Occupancy Group classification (see IBC Sections 307, 414, and 415).

Three ranges of quantities are established by the two limits discussed above: the low range spans from no HazMat up to but less than the Permit Amounts per facility; the intermediate range spans from quantities equal to Permit Amounts per facility up to a quantity equal to an MAQ in a single HazMat Area; and the high range applies to a quantity in excess of an MAQ in any HazMat Area.

Facilities with quantities of HazMat in the lowest range are not subject to the general HazMat regulations (see Section 2703.1.3 of the IFC) though there may be some material- and process-specific regulations that apply (see Chapters 11 through 26, 38, and 45 of the IFC).

Facilities in the intermediate range have quantities of HazMat considered significant enough to be dangerous – especially in an emergency incident – but not large enough to warrant certifying the facility as an H Occupancy.

Facilities in the high range have a quantity of HazMat in a HazMat area in excess of an MAQ. This area and all portions of the facility not compliantly separated from it have to be certified as a division of the H Occupancy Group.

## **B HazMat Areas (Control Areas and Hazardous Occupancies)**

“HazMat Area” is used by FPD for indoor and outdoor areas of facilities where HazMat is located. It is a general term that includes both Control Areas and Hazardous (“H”) Occupancies. It also includes areas where specific materials regulated by the codes are located such as “tank farms”, battery charging areas, LPG storage areas, etc.

Control Areas are HazMat areas where quantities of HazMat are less than or equal to the MAQs. HazMat Areas where a quantity of HazMat is greater than the corresponding MAQ is an H Occupancy. In most cases, a facility has only one Control Area – the building itself – but the codes permit multiple Control Areas in and around buildings. In cases where multiple Control Areas are present, they are typically enclosed spaces inside the building separated from other indoor areas by fire-rated interior walls, fire-rated floors, and fire-rated ceilings. Outdoor Control Areas are separated by fire-rated walls or by distance (see IFC Section 2703.12). Again, by definition, a Control Area cannot contain more than the MAQ for any hazard.

When a quantity of HazMat in a HazMat Area exceeds the MAQ permitted per Control Area, the HazMat Area is classified per the IBC as an H Occupancy. If the HazMat Area occupies the entire facility, then the facility has to be certified as an H Occupancy. If the HazMat Area is adequately separated from other areas of the facility and provided with the necessary

mitigation features, the facility may be classified as multi-use with only the HazMat Area classified as the H Occupancy (often referred to as an "H room").

Hazardous Occupancies are required to have special construction features and life-safety systems depending on the division of the H Occupancy Group, the specific hazards of the materials involved, and the nature of the operations. This only applies to interior spaces however. There is no option to classify an outdoor HazMat Area as an H Occupancy. Quantities of HazMat in excess of the MAQs in outdoor HazMat Areas are only permitted for specific materials such as those regulated in Chapters 11 through 26, 38, and 45 of the IFC.

## **C Submittal Requirements**

There are two types of permits issued under the IFC: construction permits and operational permits (see IFC Section 105.1.2 as amended). A construction permit allows the permit holder to install or modify systems and equipment regulated in the IBC or IFC. In Denver, most construction permits – including those involving HazMat – are reviewed by both FPD and the Building Department, but issued by the Building Department.

An operational permit allows the permit holder to conduct an operation or a business regulated in the IFC. Unlike construction permits, all operational permits are both reviewed and issued by FPD. An operational permit or formal acknowledgement one is unnecessary is required for all occupancies that characteristically have HazMat such as industrial, automotive repair, warehouse, etc. occupancies.

Both the construction and operational permitting processes consist of four steps: *application*, *review*, *permit issuance*, and *inspection*. HazMat Operational Permit application, review, and issuance are processed differently depending on whether the applicant is renewing an existing operational permit or acquiring a new one (inspections are performed the same way in both cases). Renewals are applications for facilities with an existing HazMat Operational Permit that is being reissued and in which HazMat quantities or processes have not changed since the previous permit. New applications for a HazMat Operational Permit are required for a facility because a HazMat process or quantity has changed since the previous permit, or because a facility with or proposing to utilize HazMat does not currently have one.

### **1. Application**

The collection of materials submitted when applying for a HazMat Operational Permit – or demonstrating one is not required – are referred to as the Hazardous Materials Permit Application (HMPA – see Section II.A of these instructions). An HMPA is submitted in response to a request from either FPD's HazMat Unit or Fire Protection Engineering (**FPE**) group.

#### **a. Renewals**

Operators of facilities with an existing HazMat Operational Permit are required to renew that permit annually. HMPAs are requested by FPD's HazMat Unit in the form of a "60-Day Letter" (see Appendix I). Typically the contact and facility information in

the documentation required for the previous issuance of the HazMat Operational Permit is updated and submitted.

Operators renewing their HazMat Operational Permit need to compare the date and version of the HMR workbook on the DFD HazMat website with the version of the last HMR submitted for their facility (see Section II.B of these instructions).

If the last HMR submittal was on an earlier version of the MS Excel workbook, the latest version needs to be downloaded and the data copied into it (see Section IV.B of these instructions). It is very important applicants use the “Paste Values” or “Paste Special...” then “Values” (both under the “Paste” menu on the Excel Home tab) when copying and pasting data. Using a simple “Paste” often corrupts the underlying formatting and formulas and operators are forced to start over with a clean copy.

If operators renewing their HazMat Operational Permit last submitted their facility’s data on an Inventory Worksheet compatible with 2003 and older versions of Excel, the data needs to be reformatted prior to copying into the latest version of the HMR (see Section IV.B.1 of these instructions). An MS Excel workbook is available for download on DFD’s HazMat website to assist with this process (see Section IV.A.4 of these instructions).

Electronic communication is used to expedite the application process and is the required method for renewals (only submit paper forms if specifically requested). Typically the documentation necessary for the previous HMPA is updated and submitted via email to the FPD HazMat group at: [dfdhmis@denvergov.org](mailto:dfdhmis@denvergov.org).

When necessary, written correspondence may be mailed to:

Denver Fire Department  
Hazardous Materials Unit  
745 W. Colfax Avenue  
Denver, CO 80204

Phone: (720) 913-3513

Fax: (720) 913-3587

Applications for existing facilities in which a change in an operation or business practice required the introduction or increase of HazMat are considered "New Applications" (see Section II.C.1.b of these instructions below).

**b. New Applications**

New applications are submitted to FPD’s FPE group. Requests for new applications are initiated by one of two mechanisms: referrals and construction permit application reviews.

Referrals originate from a variety of sources including DFD company-level annual inspections, government agencies, citizens, new business licenses, FCO orders, etc. Once referred, a request for an HMPA will initially be made verbally to the facility operator. If an HMPA is not submitted in response to the verbal request, an "Order-to-Comply" (OTC) is issued to compel its completion. It should be noted most facility operators respond to the verbal notification and a formal OTC is unnecessary.

New HMPA's are submitted in one of two ways depending on the circumstances: either directly to an FPE during Walk-thru review hours or to the Log-in Technicians at the Building Department Log-in counter.

If no construction requiring a permit is being pursued at the facility, the HMPA has to be submitted as a stand-alone scope of work to an FPE at the Building Department "Walk-thru Review" counter between 8:00 AM and 11:15 AM any day the City is open for business. It will be assigned to DFD's FPE group for review as an "F-log". If submitted as a stand-alone scope of work, a review fee of either \$50 (less than 10 materials listed on the *HMIS* worksheet) or \$100 (10 or more materials listed on the *HMIS* worksheet) is required.

The HMPA is submitted to the Log-in Techs if it can be part of a construction permit application at the same facility. Construction permit applications are made at the Building Department Log-in counter between 8:00 AM and 3:30 PM any day the City is open for business. The HMPA may be submitted with the construction permit application or added to one if one is already in the system. If submitted with or added to a construction permit application, the HMPA review fee is included in the construction review fee.

Alternatively, an HMPA may be requested because an application for a construction permit is being submitted. Construction permit applications include those submitted for remodels, building modifications, new construction, racking, and fire protection. The Building Department Log-in technicians will typically request an HMPA based on the Use and Occupancy Classification assigned to the facility for which the construction permit is being sought. Occupancies that characteristically involve HazMat operations and for which an HMPA will be required include (but are not limited to):

- Automotive Repair Garages,
- Aviation Facilities,
- Biofuel Generation,
- Breweries
- Combustible Dust-Producing Operations,
- Commercial Fireworks,
- Distilleries,
- Dry Cleaning Plants,
- Explosives and Blasting Agents,
- Flammable Finish and Finish-Removal Operations (Spraying and Dipping),
- Fruit and Crop Ripening,

Fumigation and Thermal Insecticidal Fogging,  
Hazardous Occupancies,  
Hospitals,  
Hot Work (including Welding),  
Industrial Ovens,  
Laboratories,  
Lumber Yards,  
Manufacture of Organic Coatings,  
Medical Clinics and Offices,  
Motor Fuel-Dispensing Facilities,  
Paint Manufacturing,  
Pharmaceutical Manufacturing,  
Retail and Wholesale Hardware,  
Retail and Wholesale Paint,  
Retail and Wholesale Sporting Goods,  
Semiconductor Fabrication Facilities,  
Swimming Pools,  
Tire Rebuilding and Storage,  
Warehouses,  
Wineries  
Woodworking Facilities.

An HMPA submitted directly to an FPE at the Walk-thru review counter or in association with a construction permit application is required to be physically submitted on a compact disc (CD) or USB version 2.0 (or earlier) flash drive. Depending on the specific details of the project, subsequent correspondence and revisions may be accepted via email by the FPE reviewing the HMPA (please coordinate this with the assigned engineer).

Occasionally an HMPA is requested during the review of a construction permit application when it wasn't required by the Building Department Log-in counter technicians at the time the construction permit application was submitted. Depending on the specific details of the project, the submittal may be accepted via email. Please verify the submittal method and format with the FPE making the request. There is no additional HMPA review fee for this scenario (it's already included in the construction permit review fee), however additional review hours may be charged at permit issuance depending on the complexity of the HMR and its impact on the construction permit.

Regardless of the mechanism initiating the request, new HMPA's are completed and submitted in two steps. The initial submittal is relatively small in scope and used to determine if additional detailed information is actually necessary. The next step – when necessary – is the submittal of a more comprehensive set of data.

If a request for an HMPA is made on a facility that does not have any HazMat (noting minor amounts of items like cleaning supplies used by the facility are not regulated),

the initial step may be satisfied by submitting a letter on the relevant business's letterhead and signed by the facility operator stating, "No materials regulated by the International Fire Code as amended by the City and County of Denver are handled, dispensed, produced, stored, or used in this facility" (see Section IV.A.2 of these instructions).

If an HMPA is requested on a facility that has HazMat, the initial submittal need only consist of an HMR with the *Contacts* worksheet, the *HMIS* worksheet, and the first four fields on one of the forms on one of the *HazMat\_Areas* worksheets completed.

If it's determined the quantity of HazMat present is less than the permit amount, operators simply need to maintain on site the partial HMR completed for the initial submittal. Periodically, this report will be requested by FPD to verify continued compliance.

If the initial submittal indicates a facility has HazMat in excess of the permit amounts, a subsequent submittal is required (see Section III.C.2.b of these instructions).

At the discretion of the FPE reviewing the HMPA (see Section III.C.2.a of these instructions), the subsequent more-comprehensive submittal may be deferred from a construction permit application. In this case, it's considered a stand-alone application and is submitted on a CD to an FPE at the Walk-thru Review counter as described above. Please note FPD Inspection and Testing cannot sign off on the construction permit until all issues with all deferred submittals have been resolved.

## **2. Review**

### **a. Renewals**

Renewal applications are reviewed by the FPD/HazMat Unit. Unless HazMat quantities have changed to the extent a regulation limit is crossed (see Section III.A of these instructions), verification is primarily performed via inspection. If HazMat quantities have changed significantly, the application is considered "new" and will be required to be submitted to FPD's FPE group.

### **b. New Applications**

New applications are reviewed by FPD's FPE group. Code requirements and facility regulatory history are compared to the description of the facility and its operations for compliance and consistency. The presence of the systems, features, and components mandated in the codes for the facility to conduct its operations are verified. The characteristics of the listed materials are checked for completeness and accuracy and the quantities are compared to the regulation limits (see Section III.A of these instructions). All warnings identified on the *HMIS* worksheet are examined to verify whether they are errors (see Section IV.B.5 of these instructions). All issues identified from this process and all errors identified on the *HMIS* worksheet are conveyed back to the applicant for resolution. Once all of the issues have been resolved and all of the

errors on the *HMIS* worksheet have been cleared, the HazMat Operational Permit is released.

As noted above, new applications are normally submitted – and therefore reviewed – in one or two steps. The initial HMPA is comprised of either

- i. a No-HazMat statement (see Section IV.A.2 of these instructions), or
- ii. an HMR with
  - the *Contacts* worksheet completed,
  - the *HMIS* worksheet completed, and
  - at least the first four rows on each form used on the *HazMat\_Area* worksheet(s) completed (one HazMat form is required to be completed for each HazMat area in the facility).

The review of new HMPA’s for facilities in which all quantities of HazMat are below the corresponding Permit Amounts (see Section III.A of these instructions) including no-HazMat, typically concludes once all issues identified in the initial submittal have been resolved. The HMPA is forwarded to the FPD HazMat Unit for cataloging and a letter acknowledging the facility has less than the permit amounts is issued to the facility operator. A copy of this letter and the HMPA need to be maintained on site at all times. If the HazMat quantities or processes change, the facility operator is required to submit a new HMPA documenting the change in operational information.

If the initial submittal indicates a facility has HazMat in excess of the permit amounts (see Section III.A of these instructions), the applicant will be notified a subsequent submittal is required comprised of a complete HMR (see Section II.B of these instructions) along with a Hazardous Materials Management Plan (HMMP – see IFC Section 2701.5.1 and Section II.D of these instructions). The *Building* worksheet and all fields on the forms utilized on the *HazMat\_Areas* worksheet(s) have to be completed (one form per HazMat area) to complete the HMR.

If the initial submittal indicates a quantity of HazMat in excess of an MAQ in a single HazMat area, an EAP is also required (see Section II.E of these instructions). In these cases, the HazMat area is identified as a division of the “H” Occupancy Group per the IBC. If this is a change from the existing Certified Occupancy or if modifications to the facility are necessary to accommodate an H Occupancy, a construction permit is required to accomplish such.

Based on the review, the regulation limit is established along with any necessary Change of Use or Occupancy. Once all issues have been resolved, the FPE group will forward the HMPA to the HazMat Group for final processing and operational permit issuance. Copies of the permit and the HMPA need to be maintained on site at all times. The documents making up the HMPA (HMR and possibly an HMMP and EAP) must be continuously maintained and submitted annually.

### 3. Permit Issuance

FPD's HazMat Unit will either mail a bill to the facility operator for the HazMat Operational Permit fee or a letter formally acknowledging a HazMat Operational Permit is not required (no permit fee is associated with the acknowledgement letter). Once payment is received by FPD in response to the bill, the HazMat Operational Permit will be mailed to the facility operator. A copy of the operational permit or the acknowledgement letter must be maintained on site at all time with the HMPA.

A copy of the HazMat Operational Permit fee schedule is provided in Appendix C.

### 4. Inspection

FPD's HazMat inspectors will generally call the facility operator to set an appointment for the HazMat inspection but may occasionally "drop in" and request to conduct the inspection if their location and schedule facilitate such.

## IV Instructions for Completing the Hazardous Materials Permit Application (HMPA)

### A. Locating Documents

All of the application documents may be found at the FPD/HazMat homepage:

<https://www.denvergov.org/firedepartment/FireDepartmentHome/Services/FirePrevention/HazardousMaterialsHMR/tabid/437034/Default.aspx>

#### 1. HMR

The HazMat Report (HMR) workbook is provided with a naming format similar to:  
[HazMat\\_Report\\_20140109.02\\_DFD.xlsx](#)

The workbook is written in 2007 Microsoft Excel. The applicant will need to have access to 2007 (or later, e.g., 2010) Excel. The workbook contains functionality not supported in older versions such as 2003.

The numbers in the file name reflect the revision date; i.e., in the example above, 20140109 is January 9<sup>th</sup>, 2014 and .02 shows it's the second posting on that date.

#### 2. No HazMat Template

The No HazMat template is written in 2007 Microsoft Word: <<<filename>>>. Again, it will open in newer versions of Word but is not compatible with older versions (if a version of the document is needed for an older version of MS Word, contact the HazMat Unit or the FPE group (see Appendix H).

Use the template language on the business letterhead and add any pertinent information. The letter is required to be signed by the facility operator and will subsequently be used to formally acknowledge a HazMat Operational Permit is not required.

### 3. HMPA Completion Instructions

A copy of these instructions is provided with a naming format similar to:  
[HazMat\\_Permit\\_Application\\_Instructions\\_20131203.01.pdf](#)

The document is posted in Adobe .pdf format and was generated with Adobe Acrobat version 10. The numbers in the name reflect the revision date; i.e., in the example above, 20131203 is December 3<sup>rd</sup>, 2013 and .01 shows it's the first posting on that date.

### 4. HMIS Conversion Instructions

As of June 1, 2011, the 2003 MS Excel version of the HMIS spreadsheet is no longer accepted. All submissions must be in the 2007 version of the Excel HMR workbook. An informational 2007 Microsoft Power Point tutorial is available to assist individuals with filling out their HMR properly and copying and pasting their 2003 Excel spreadsheets into the 2007 Excel workbook.

Conversion instructions are provided in a file with a naming format similar to:  
[HazMat\\_Inventory\\_Report\\_Conversion\\_Completing\\_Instructions\\_20121009.03.pptx](#)

The numbers in the name reflect the revision date; i.e., in the example above, 20121009 is October 9<sup>th</sup>, 2012 and .03 shows it's the third posting on that date.

### 5. HMIS Conversion Workbook

The conversion workbook is provided with a naming format similar to:  
[HazMat\\_Inventory\\_Format\\_Conversion\\_20120101.01.xlsx](#).

This is a 2007 Excel workbook that reformats data existing in pre-2011 HMIS Excel spreadsheets into the current format (see Section IV.B.1 in these instructions). The numbers in the name reflect the revision date; i.e., in the example above, 20120101 is January 1<sup>st</sup>, 2012 and .01 shows it's the first posting on that date.

The pre-2011 Excel spreadsheets were named something like:  
[Inventory\\_Worksheet\\_100A.xls](#) (the number 100 reflects up to 100 materials were accommodated in the file).

The applicant copies their data from the pre-2011 HMIS and pastes it into the worksheet named "HMIS\_Prior\_to\_2011" of the conversion workbook. The applicant then copies the reformatted data from the worksheet named "HMIS\_2011" and pastes the values (note "Paste Values" is different than a straight "Paste" which includes formatting, formulas, etc.) into the HMIS worksheet in the HMR workbook. Detailed instructions are posted on the same site in Microsoft PowerPoint (see Section IV.A.5 of these instructions) and are provided below (see Section IV.B.1 of these instructions).

### 6. Permit Fee Table

The HazMat permit fee table may be found at:

<http://www.denvergov.org/Portals/678/documents/Permit%20Fees%2001-01-09%20Rev030911.pdf>

## **B. HazMat Report (HMR)**

The HazMat Report is the core of the HMPA (see Section II.A of these instructions). The current version combines the Hazardous Materials Inventory Statement (see Section II.C of these instructions), facility contacts, and facility physical and code-based information – formerly required in separate documents – into a single 2007 MS Excel workbook.

The HMR provides the applicant extensive error checking for hazard compatibility and regulatory compliance. An invoice summarizing the materials and hazards corresponding to the various HazMat Operational Permits is generated. Hazard summaries corresponding to the MAQs tabulated in the IFC and IBC are also generated (these are “hidden” worksheets used primarily for review- see Section III.C.2 of these instructions – but may be “unhidden” by FPD at the applicant’s request).

An HMR is required for each facility – even if all the facilities are occupied by the same business. “Facility” is intended to mean the entire area occupied by the business, whether a tenant space (or spaces) within a building or an entire building, and includes the surrounding exterior areas on the same parcel of land. Separate buildings are considered separate Facilities due to the fact discrete buildings (and adjacent land) are regulated individually in the codes, and also due to the need by emergency responders to tailor their actions to specific structures.

After downloading the HMR workbook from the FPD/HazMat homepage, save a copy with a file name that includes the letters “HMR”, the date, the company name, the facility name (especially if the business has more than one facility in Denver), and the address; e.g., HMR\_20130101\_JD\_Donroy\_Chem\_Co\_DenCen\_Fac\_745\_W\_Colfax\_Bldg\_2.xlsx.

In Denver, the HMR is a 2007 Microsoft Excel workbook consisting of 4 input worksheets: *Contacts*, *Building*, *HazMat\_Areas*, and *HMIS*. There are two *HazMat\_Areas* worksheets with 20 HazMat Area forms on each (40 total). As noted previously, the initial submittal is comprised of an HMR with the first four fields of a *HazMat\_Areas* form completed, along with completed *Contacts* and *HMIS* worksheets (see Section III.C.1 of these instructions). When a complete HMR is required, the *Building* worksheet is also required to be completed along with all the fields on the *HazMat\_Areas* forms that were utilized.

All HMRs must be submitted on the latest posted version of the workbook. If the applicant last submitted an HMPA using the pre-2011 HMIS spreadsheet, the data has to be reformatted and copied to the HMIS worksheet in the current HMR.

### **1 Reformatting old data:**

If operators renewing their HazMat Operational Permit last submitted their facility’s data on an HMIS spreadsheet compatible with 2003 and older versions of Excel, the data needs to be reformatted prior to copying into the latest version of the HMR. An MS Excel workbook named “HazMat\_Inventory\_Statement\_Conversion” is available for download

from the FPD homepage to assist with this process (see Section IV.A.4 of these instructions).

There are two worksheets in this workbook distinguished by the tabs at the bottom of the screen. The first worksheet named “HMIS\_Prior\_to\_2011” is set up in the format used in the HMIS spreadsheets compatible with 2003 and older editions of Excel. Data is copied into this worksheet from the old HMIS spreadsheet. The second sheet named “HMIS\_2011” is set up in the format of the latest version of the HMR worksheet named “HMIS”. Data is copied from the HMIS\_2011 worksheet and pasted into the HMIS worksheet in the new HMR workbook.

Specifically, both the old (pre-2011) HMIS spreadsheet and the HazMat Inventory Format Conversion workbook are opened in a 2007 or later version of Excel. The old HMIS spreadsheet is brought to the front of the screen by selecting the corresponding button in the tray (usually at the very bottom of the screen).

All the data on the old HMIS spreadsheet from Excel column B to Excel column II (double i’s) and from Excel row 6 down to the number of rows of data (this excludes the heading rows at the top and the Line #'s in the left column) is highlighted and copied (a copy command can be performed by using <ctrl> C on the keyboard).

The workbook “HazMat\_Inventory\_Statement\_Conversion” is then brought to the front of the screen by selecting the corresponding button in the tray (usually at the very bottom of the screen). The worksheet “HMIS Prior to 2011” is made active in this workbook by selecting the corresponding tab at the bottom of the Excel window.

Excel cell B6 on the worksheet “HMIS\_Prior\_to\_2011” is selected by simply clicking in the cell. The “Paste” command is **NOT** executed. Using a simple “Paste” often corrupts the underlying formatting and formulas and applicants are forced to start over with a clean copy of the workbook. Instead a “Paste Values” (or “Paste Special...” then “Values”) command from the Paste menu on the Excel Home tab is performed.

The old HMIS spreadsheet is then closed (not saving changes if prompted). The HazMat Report workbook is opened and the HMIS tab selected to bring that worksheet to the front. The workbook “HazMat\_Inventory\_Statement\_Conversion” is brought to the front of the screen by selecting the corresponding button in the tray (usually at the very bottom of the screen). The worksheet “HMIS\_2011” is made active by selecting the corresponding tab at the bottom of the Excel window.

The worksheet named “HMIS\_2011” will contain – in the updated format – all the data input into the worksheet named “HMIS\_Prior\_to\_2011” that can be reformatted. Note the data is formatted in three panels separated by two green columns. The leftmost panel of data is selected by highlighting Excel column E to Excel column O (does not include any green columns) and from Excel row 3 down to include all the rows containing pertinent

data. The highlighted data is then copied (a copy command can be performed by using <ctrl> C on the keyboard).

The HMR workbook is brought to the front of the screen by selecting the button in the tray (usually at the bottom of the screen). Excel cell E3 on the HMIS worksheet is selected by clicking in it. A simple “Paste” command is **NOT** executed. As noted above, using a simple “Paste” often corrupts the underlying formatting and formulas and applicants are forced to start over with a clean copy. Instead a “Paste Values” (or “Paste Special...” then “Values”) command from the Paste menu on the Home tab is performed. The left panel of data is now populated.

The workbook “HazMat\_Inventory\_Statement\_Conversion” is again brought to the front of the screen by selecting the corresponding button in the tray (usually at the very bottom of the screen). The worksheet “HMIS 2011” is made active by selecting the corresponding tab at the bottom of the Excel window. The data from Excel column T to Excel column AS and from Excel row 3 down to include all of the rows of pertinent data are highlighted and copied.

The HMR workbook is brought to the front of the screen by selecting the button in the tray (usually at the bottom of the screen). Excel cell T3 on the HMIS worksheet is selected by clicking in it. A simple “Paste” command is **NOT** executed. As noted above, using a simple “Paste” often corrupts the underlying formatting and formulas and applicants are forced to start over with a clean copy. Instead a “Paste Values” (or “Paste Special...” then “Values”) command from the Paste menu on the Home tab is performed. The right panel of data is now populated.

The “HazMat Inventory Format Conversion” workbook is then closed (and renamed if changes are being saved). The HMR workbook is completed per the instructions provided below by typing in the additional data not captured in the old HMIS spreadsheet.

## 2 **Contacts** Worksheet

The ability to speak with someone intimately familiar with the facility, its layout, its operation and its processes under emergency conditions is vital to providing an accurate and comprehensive emergency response. And the same ability under nonemergency conditions facilitates efficient review and inspection by eliminating multiple contact attempts.

Contacts is the first worksheet in the HMR (2007 MS Excel) workbook (note the tabs at the bottom of the Excel window when the workbook is open). The worksheet contains one (1) Subject Facility Contact Information form, one (1) signature block for the individual completing the HMR, and three (3) Adjacent Facility Contact Information forms.

**Please Note**, the adjacent facility contact information is only required if Tier 2 reporting is necessary under the Superfund Amendments and Reauthorization Act (SARA) Title 3, aka “Emergency Planning and Right to Know Act of 1986”.

The Subject Facility Contact Information form and the Hazardous Materials Report Preparer Information form are both required to be completed for all HMR submittals. As noted above, HMRs presented with new (as opposed to renewal) HMPA's are submitted in one or two steps. The initial submittal is used to determine whether a more comprehensive set of data is necessary. These two forms need to be completed for the initial step.

### **SUBJECT FACILITY CONTACT INFORMATION**

- **Date** please specify the month, day and year the preparer completed the HMR
  
- **Subject Facility**
  - Name:** provide the name of the facility with HazMat; please include the name of the business if the facility has a different label (e.g., Jill's Distillery; Liquid Storage Warehouse)
  - Address** provide the complete street address including street compass direction, building number, and unit number as applicable (it's understood the subject facility is located in Denver)
  - Zip** identify the Post Office Zip Code in which the subject facility is located
  - Phone** provide the subject facility general phone number
  - FAX** provide the subject facility general facsimile phone number
  - URL** provide the link to the company's web site if it has one
  - DFD Occupancy ID** this may copied from any existing FPD Operational Permit; call 720.913.3513 to obtain for new applications
  
- **Business Owner**
  - Name** provide the name of the entity (personal, corporate, holding company, etc.) that owns the business operating (with HazMat) out of the subject facility
  - Address** provide the complete street name and number at which mail is received by the business owner; provide and label the street names and numbers in both the mailing address and the physical address if they're different
  - City** provide the name of the city in the mailing address of the business owner; provide and label the city in both the mailing address and the physical address if they're different
  - State** provide the name of the state in the mailing address; provide and label the state in both the mailing address and the physical address if they're different
  - Zip** provide the Post Office Zip Code in the mailing address; provide and label the Zip Codes of both the mailing address and the physical address if they're different
  - Phone** provide the 9-digit office number of the business owner
  - FAX** provide the 9-digit facsimile phone number primarily used by the business owner
  - email** provide the business email address primarily used by the business owner

- **Property Owner**
  - Name provide the name of the entity (personal, corporate, holding company, etc.) that owns the property on which the subject facility is located; write “same as Business Owner” if applicable; if the owner of the land is different than the owner of the building, provide and label both
  - Address provide the complete street name and number at which mail is received by the property owner; if the owner of the land is different than the owner of the building, provide and label both; leave blank if the land and building are both owned by the business owner
  - City provide the name of the city in the mailing address of the property owner; if the owner of the land is different than the owner of the building, provide and label both; leave blank if the land and building are both owned by the business owner
  - State provide the name of the state in the mailing address of the property owner; if the owner of the land is different than the owner of the building, provide and label both; leave blank if the land and building are both owned by the business owner
  - Zip provide the Post Office Zip Code in the mailing address of the property owner; if the owner of the land is different than the owner of the building, provide and label both; leave blank if the land and building are both owned by the business owner
  - Phone provide the 9-digit office phone number of the property owner; if the owner of the land is different than the owner of the building, provide and label both; leave blank if the land and building are both owned by the business owner
  - FAX provide the 9-digit facsimile phone number primarily used by the property owner; if the owner of the land is different than the owner of the building, provide and label both; leave blank if the land and building are both owned by the business owner
  - email provide the business email address primarily used by the business owner; if the owner of the land is different than the owner of the building, provide and label both; leave blank if the land and building are both owned by the business owner
  
- **24-Hour Emergency Contacts**

sub-forms for 3 names are provided; please provide the names (in decreasing order) of as many people as possible who are capable of providing operational knowledge of the facility in an emergency condition

  - Name provide the name of a person having comprehensive knowledge of the facility and its operations involving HazMat that is capable of assisting emergency responders under emergency conditions
  - Title provide the position title (e.g., Safety Manager) held by the person named above
  - Phone (work) provide the 9-digit office phone number of the person named above
  - Phone (home) provide the 9-digit home phone office number of the person named above

Phone (cell) provide the 9-digit cellular phone number primarily used by the person named above

Pager provide the 9-digit pager phone number primarily used by the person named above; put n/a if not applicable

email provide the email address preferred by the person named above for emergency notifications

- 24-Hour Non-Emergency Contacts  
sub-forms for 2 names are provided; please provide the names (in decreasing order) of as many people as possible who are capable of providing operational knowledge of the facility and permitting access for FPD inspections; non-emergency contacts are requested for events such as notification of adjacent facility incidents and setting up fire company inspections
- Name provide the name of a person having comprehensive knowledge of the facility and its operations involving HazMat
- Title provide the position title (e.g., Safety Manager) held by the person named above
- Phone (work) provide the 9-digit office phone number of the person named above
- Phone (home) provide the 9-digit home phone office number of the person named above
- Phone (cell) provide the 9-digit cellular phone number primarily used by the person named above
- Pager provide the 9-digit pager phone number primarily used by the person named above; put n/a if not applicable
- email provide the email address preferred by the person named above for non-emergency notifications

#### **HAZARDOUS MATERIALS REPORT (HMR) PREPARER INFORMATION**

Name provide the name of the person who completed the HMR for the subject facility

Address provide the street name and number in the mailing address of the person who completed the HMR for the subject facility

City provide the name of the city in the mailing address of the person who completed the HMR for the subject facility

State provide the name of the state in the mailing address of the person who completed the HMR for the subject facility

Zip provide the Post Office Zip Code in the mailing address of the person who completed the HMR for the subject facility

Phone provide the 9-digit business phone number of the person who completed the HMR for the subject facility

Fax provide the 9-digit business facsimile phone number of the person who completed the HMR for the subject facility

email provide the business email address of the person who completed the HMR for the subject facility

- URL provide the link to the company’s web site (if it has one) for whom the person who completed the HMR for the subject facility works
- Add'l Qualifications list licenses, titles, certifications, etc. of the person who completed the HMR for the subject facility substantiating competence in the area of HazMat regulations

**ADJACENT FACILITY CONTACT INFORMATION**

complete only if a Tier 2 Report is required under SARA Title 3 (see <http://www.cdphe.state.co.us/oeis/sara/index.html>)

- **Adjacent Facility**
  - Name: provide the name of the facility; please include the name of the business if the facility has a different label (e.g., Jill’s Trucking; Tractor Storage)
  - Address provide the complete street address including street compass direction, building number, and unit number as applicable; if the adjacent facility is not located in Denver, please include the applicable city name
  - Zip identify the Post Office Zip Code in which the adjacent facility is located
  - Phone provide the adjacent facility general phone number
  - FAX provide the adjacent facility general facsimile phone number
  - URL provide the link to the company’s web site if it has one
  - DFD Occupancy ID call 720.913.3513 to obtain for new applications
  
- **Business Owner**
  - Name provide the name of the entity (personal, corporate, holding company, etc.) that owns the business operating out of the adjacent facility
  - Address provide the complete street name and number at which mail is received by the business owner; provide and label the street names and numbers in both the mailing address and the physical address if they’re different
  - City provide the name of the city in the mailing address of the business owner; provide and label the city in both the mailing address and the physical address if they’re different
  - State provide the name of the state in the mailing address; provide and label the state in both the mailing address and the physical address if they’re different
  - Zip provide the Post Office Zip Code in the mailing address; provide and label the Zip Codes of both the mailing address and the physical address if they’re different
  - Phone provide the 9-digit office number of the business owner
  - FAX provide the 9-digit facsimile phone number primarily used by the business owner
  - email provide the business email address primarily used by the business owner
  
- **Property Owner**
  - Name provide the name of the entity (personal, corporate, holding company, etc.) that owns the property on which the adjacent facility is located; write “same as Business Owner” if applicable; if the owner of the land is different than the owner of the building, provide and label both

Address provide the complete street name and number at which mail is received by the property owner; if the owner of the land is different than the owner of the building, provide and label both; leave blank if the land and building are both owned by the business owner

City provide the name of the city in the mailing address of the property owner; if the owner of the land is different than the owner of the building, provide and label both; leave blank if the land and building are both owned by the business owner

State provide the name of the state in the mailing address of the property owner; if the owner of the land is different than the owner of the building, provide and label both; leave blank if the land and building are both owned by the business owner

Zip provide the Post Office Zip Code in the mailing address of the property owner; if the owner of the land is different than the owner of the building, provide and label both; leave blank if the land and building are both owned by the business owner

Phone provide the 9-digit office phone number of the property owner; if the owner of the land is different than the owner of the building, provide and label both; leave blank if the land and building are both owned by the business owner

FAX provide the 9-digit facsimile phone number primarily used by the property owner; if the owner of the land is different than the owner of the building, provide and label both; leave blank if the land and building are both owned by the business owner

email provide the business email address primarily used by the business owner; if the owner of the land is different than the owner of the building, provide and label both; leave blank if the land and building are both owned by the business owner

- 24-Hour Emergency Contacts

sub-forms for 3 names are provided; please provide the names (in decreasing order) of as many people as possible who are capable of providing operational knowledge of the facility in an emergency condition

Name provide the name of a person having the ability to lock down or evacuate the adjacent facility and capable of assisting emergency responders under emergency conditions

Title provide the position title (e.g., Safety Manager) held by the person named above

Phone (work) provide the 9-digit office phone number of the person named above

Phone (home) provide the 9-digit home phone office number of the person named above

Phone (cell) provide the 9-digit cellular phone number primarily used by the person named above

Pager provide the 9-digit pager phone number primarily used by the person named above; put n/a if not applicable

email provide the email address preferred by the person named above for emergency notifications

- **24-Hour Non-Emergency Contacts**  
sub-forms for 2 names are provided; please provide the names (in decreasing order) of as many people as possible who are capable of providing operational knowledge of the facility and permitting access for FPD inspections; non-emergency contacts are requested for events such as notification of subject facility incidents and setting up fire company inspections
- Name provide the name of a person responsible for the facility and its operations
- Title provide the position title (e.g., Security Manager) held by the person named above
- Phone (work) provide the 9-digit office phone number of the person named above
- Phone (home) provide the 9-digit home phone office number of the person named above
- Phone (cell) provide the 9-digit cellular phone number primarily used by the person named above
- Pager provide the 9-digit pager phone number primarily used by the person named above; put n/a if not applicable
- email provide the email address preferred by the person named above for non-emergency notifications

### 3 **Building** Worksheet

This is the second worksheet in the HMR workbook. It is used to capture general information about the building housing the facility. The information requested is code-based and provides personnel trained in the codes insight into the fire and life-safety features and systems that are or should be present.

The rightmost column contains the cells for input. The applicant may expand these as needed to see the text. Go to the “Home” tab on the Excel window and select the “Format” dropdown menu, then “Autofit Row Height.”

The Building worksheet only contains one form and is required to be completed when a quantity of HazMat has been identified as exceeding the corresponding Permit Amount from the review of the initial submittal.

[=] Fill in all fields; put n/a if not applicable.

[=] Expand the row height as necessary to display all entered text (under the Excel Home tab, drop the menu down under the Format icon and select “AutoFit Row Height”).

*1 Generally describe the subject facility and operation, and if known, provide the NAICS (North American Industrial Classification System) number:*  
Provide a broad brush use-classification of the facility and occupancy in laymen’s terms; e.g., “warehouse used for wholesale distribution of frozen food products”. NAICS information may be found at: <http://www.census.gov/eos/www/naics/>.

2 *Does the subject facility occupy the entire building?*

Facility is intended to mean the entire space occupied by the business handling HazMat, whether a single tenant space or multiple tenant spaces within a building or an entire building, including the surrounding exterior areas on the same parcel of land. Separate buildings however, are considered separate Facilities.

3 *[A] Does the subject facility have an existing C/O that will not be modified in conjunction with, or as a result of, this HazMat permit;*

*-- or --*

*[B] will the subject facility be issued a [new] C/O in conjunction with, or as a result of, this HazMat permit?*

As stated in the IBC, “No building shall be used or occupied, and no change in the existing occupancy classification of a building or structure or portion thereof shall be made until the Building Official has issued a certificate of occupancy therefore...” A Certificate of Occupancy (C/O) is the document authenticating the facility has been certified for the intended use. A permanent copy of this important record should be maintained by the building owner. Copies of C/O’s should also be maintained by Building Department Records 720.865.2790.

The information sought in item 3 is whether or not the facility is currently certified to have the HazMat for which the HazMat Operational Permit is being pursued – or is required to be [re]certified to do have it.

4 *If [A] above, provide the date of the current C/O for the subject facility.*

C/Os are dated when they are issued so subsequent use/occupancy inspection results can be compared against the certified use and occupancy. The date requested in item 4 allows HMPA reviewers to correlate regulations with the codes in effect when the last C/O was issued.

5 *Provide the gross area of the facility (sf):*

Please note the definition of “facility” in item 2 above. The value requested for item 5 is the gross area of the facility in units of square feet (sf); i.e., the total aggregate square footage of all floors (stories, basements, and mezzanines) allocated to the business with HazMat, enclosed and bounded by interior and exterior perimeter walls and covered by roof or floor above; areas of the facility permanently exposed to the exterior shall be included if such areas are under the horizontal projection of the roof or floor next above.

6 *Provide the gross area of the bldg (sf):*

The information requested in item 6 (along with the information requested in item 5 above) helps the HMPA reviewer ascertain allowable and fire area area compliance. The “gross area of the building” is the total aggregate area in square feet (sf) of all levels (stories, basements, and mezzanines) enclosed and bounded by exterior walls and covered by roof; areas of the building not provided with surrounding walls shall be included in the gross

area if such areas are included within the horizontal projection of the roof or floor next above.

*7 Provide number of stories above grade of the facility (do not include interior mezzanines):*

“Story Above Grade Plane” is defined in the IBC as, “any story having its finished floor surface entirely above grade plane, or in which the finished surface of the floor next above is:”

1. More than 6 feet above grade plane; or
2. More than 12 feet above the finished ground level at any point

This information should be provided on the C/O and on the original construction permit for the building. Building Department Records may have these for buildings dating back to about 1960 (720.865.2790). The information requested in item 7 allows HMPA reviewers to correlate regulations with the codes in effect when the last C/O was issued.

*8 Provide the number of basement levels under the facility:*

Any occupiable building level under a “Story Above Grade Plane” (see item 7 above) is considered a basement level. There are regulations affecting the quantity of HazMat permitted in a basement. The information requested in item 8 allows HMPA reviewers to correlate regulations with the codes in effect when the last C/O was issued.

*9 List Occupancy Classification(s) of the facility from the current C/O:*

Occupancy Classifications are established through the IBC and are defined in IBC Chapter 3. These will be listed on the C/O. Please provide the information in an Occupancy/Use format; i.e., S1/Warehouse, F2/Brewery, H3/Distillery, etc. Virtually all detailed requirements in the codes are established by the Occupancy Classifications in combination with the Construction Types (see item 10 below). It’s important to note the Occupancy Classification abbreviations have changed several times in the history of the codes (e.g., an Occupancy Classification abbreviation of H on a C/O in 1980 mean something entirely different than an H in 2013). This is why the C/O date (see item 4 above) is so important.

*10 List Construction Type(s) of the facility from the current C/O:*

Construction Types are established through the IBC and are defined in IBC Chapter 6. Most buildings are a single Construction Type but it’s not uncommon to have multiple. These should be listed on the C/O and on the building’s original construction permit. Virtually all detailed requirement in the codes are established by the Construction Types in combination with the Occupancy Classifications. It’s important to note the Construction Type abbreviations have changed a couple of times in the history of the codes (e.g., a Construction Type of 2 in 1930 is different than a Construction Type of 2 in 2013). This is why the C/O date (see item 4 above) is so important.

11 *If mezzanines are present in the facility, provide total number of mezzanines, the total mezzanine area, and describe their distribution:*

Please note the information is requested for the facility and not for the building (if the two are different). Mezzanine is defined in the IBC as “An intermediate level or levels between the floor and ceiling of any story and in accordance with [IBC] Section 505.” They are essentially a mechanism to increase the usable floor area within a room without adding on to a building. The information is requested in a free-format like, “there are 3 mezzanines in the facility with a total area of 1,700 square feet (sf): two in the warehouse on the north end (800 sf and 375 sf) and one on the second story of the office area on the south end (525 sf)”.

### ***Fire Protection***

12 *Describe the extent to which the subject facility is sprinklered (throughout, partial, or none). If only partially sprinklered, describe what areas are and are not protected. Identify whether any special suppression systems (e.g., chemical) are installed and where.*

Most facilities and buildings provided with fire suppression systems (i.e., *sprinklered*) have them installed throughout. It’s not unusual however for some portions of buildings to be sprinklered while the remaining portions are not (e.g., a basement may be sprinklered while the main floor and above are not). These are considered “partially sprinklered” buildings. Special suppression systems include foam and chemical-based suppression systems required for certain types of hazards. This information is valuable in an emergency response so firefighters can anticipate where fire is likely to migrate.

13 *If the subject facility has a water suppression system, please describe sprinklers (e.g., ESFR, Ordinary/Hi-Temp, etc.) and system (e.g., standard-wet, preaction, dry, etc.) and the design density (from the hydraulic placard on the system riser):*

This information should be provided on labels attached to the main sprinkler riser (riser tags). The main sprinkler riser stack is the vertical piping assembly (no smaller than 4” and may be as big as 12” in diameter) bringing water from the street main to the overhead sprinkler system. It will usually be located on the lowest level (basement or first floor) of the building and have a series of appurtenances and valves attached. There also should be a cabinet located near the main riser stack with spare sprinklers.

14 *Identify the extent to which the subject facility is detected (throughout, partial, or none). If partial, describe what areas are and are not protected:*

“Detector” is defined in National Fire Protection Association (NFPA) Standard 72 (NFPA 72) as “A device suitable for connection to a circuit that has a sensor that responds to a physical stimulus such as heat or smoke.” Smoke detectors are the most common form of fire detection devices but automatic fire detection may also be provided by heat or flame detection devices. If fire detection is provided in a room or space per the requirements of NFPA 72, it is considered “detected”. If all rooms and spaces in a facility are detected, the facility is considered detected throughout. If detection devices are present but not in all rooms and spaces, the facility is considered partially detected. This information is

valuable in an emergency response so firefighters can anticipate where fire is likely to migrate.

*15 Identify the extent to which the subject facility is notified (throughout, partial, or none). If partial, describe, what areas are and are not notified:*

“Notification Appliance” is defined in NFPA 72 as “A fire alarm system component or group of components such as a bell, horn, speaker, light, or text display that provides audible, tactile, or visible outputs, or any combination thereof.” If notification is provided in a room or space per the requirements of NFPA 72, it is considered “notified”. If all rooms and spaces in a facility are notified, the facility is considered notified throughout. If notification appliances are present but not in all rooms and spaces, the facility is considered partially notified. The information requested in item 15 allows HMPA reviewers to correlate regulations with the codes in effect when the last C/O was issued.

*16 Describe the notification activated on sprinkler water flow (if any):*

Most facilities equipped with a fire suppression system have notification appliances that activate if the sprinkler system activates – but not all. If there’s a fire alarm system (e.g., manual pull stations and/or automatic detection devices that also activate notification) then the sprinkler flow monitoring is part of that system. If only sprinkler flow is monitored, these are called sprinkler flow alarms. The information requested in item 16 allows HMPA reviewers to correlate regulations with the codes in effect when the last C/O was issued.

*17 Is the Fire Alarm / Sprinkler Flow Alarm monitored by a supervising station?*

NFPA 72 defines “Supervising Station” as “A facility that receives signals from protected premises fire alarm systems and at which personnel are in attendance at all times to respond to these signals.” There are 3 types: Central, Proprietary, and Remote. The most common type is the Central Supervising Station. If the alarm system is monitored, the supervising station will transmit the alarm signal to the Fire Department. If the alarm system is not monitored, a separate call has to be made to the Fire Department to initiate emergency response.

*18 Describe the extent to which the facility utilizes battery-powered industrial trucks (e.g., forklifts) or Uninterruptible Power Supply (UPS) systems. Describe the battery charging stations (number of stations, number of batteries, etc.). Include batteries on the HMIS worksheet-- select from the dropdown menu under Product Name /Chemical Name.*

Batteries and battery systems are regulated in 2009 IFC Section 608. The information requested in item 18 helps correlate materials listed on the HMIS worksheet with conditions in the facility.

### **Control Areas**

*19 Identify the total number of **Indoor** Control Areas in the facility (complete one form for each on the "HazMat\_Areas" worksheets):*

[Indoor] “Control Area” is defined in the 2009 IFC as “A space within a building where quantities of hazardous materials not exceeding the maximum allowable quantities per

control area are stored, dispensed, used, or handled.” For the HMR, Indoor Control Areas are HazMat areas. Each has to be described separately on separate forms on the HazMat\_Areas worksheet(s) (40 forms are provided).

Only information on Indoor Control Areas is requested in item 19 but Control Areas can be "Indoor" (spaces within buildings) and "Outdoor" (exterior areas – see item 21 below). If a facility has only one Indoor Control Area, it is typically the entire facility. If a facility has multiple Indoor Control Areas, they will be separated from each other by fire-rated construction (see Section III.B in these instructions).

20 *Describe the distribution of the Control Areas (CA) per Story (e.g., 2 on first story, 3 on second, etc.).*

The number of Control Areas is regulated in the codes per story (see Section 2703.8.3.2 and corresponding table in the 2009 IFC). The information requested in item 20 is used to verify compliance.

21 *Identify the total number of **Outdoor** Control Areas at the facility (complete one form for each on the "HazMat\_Areas" worksheets):*

“Outdoor Control Area” is defined in the 2009 IFC as “An outdoor area that contains hazardous materials in amounts not exceeding the maximum allowable quantities of Table 2703.1.1(3) or 2703.1.1(4).” space within a building where quantities of hazardous materials not exceeding the maximum allowable quantities per control area are stored, dispensed, used, or handled”. For the HMR, Outdoor Control Areas are HazMat areas. Each has to be described separately on separate forms on the HazMat\_Areas worksheet(s) (40 forms are provided).

#### ***Hazardous Occupancies***

22 *Total number of Indoor Hazardous Occupancies in the facility (these are 'Indoor' by definition -- complete one form for each on the "HazMat\_Areas" worksheets):*

Hazardous Occupancies are HazMat areas where quantities of HazMat exceeding the corresponding MAQs are stored, used, produced, dispensed or handled. "Indoor" Hazardous Occupancies can be spaces within facilities ("H"-rooms), entire facilities, or entire buildings. Hazardous Occupancies have to be separated from other Occupancies by fire-rated construction.

23 *Describe the distribution of the Hazardous Occupancies (HO) per Story (e.g., 2 on first story, 0 on second, 1 on third, etc.).*

The information requested in item 23 will be correlated to the HMMP (see Section II.D of these instructions).

24 *Total number of Outdoor HazMat Areas (amounts exceeding the MAQs) at the facility (complete one form for each on the "HazMat\_Areas" worksheets):*

These are areas permitted by the hazard-specific chapters in the 2009 IFC (chapters 27 through 44) to have quantities of HazMat in excess of the corresponding MAQ (e.g., large fuel-tank farms).

*25 Is detached storage required:*

This form of storage is required for certain materials with high explosive hazards and in quantities greater than the corresponding MAQs (see Section 2703.8.2 in the 2009 IFC). The information is being requested so it is available to emergency responders. These buildings are H occupancies by definition.

#### **4 HazMat Areas Worksheet**

There are two (2) HazMat Area worksheets: HazMat\_Areas\_1-20 and HazMat\_Areas\_21-40. Each worksheet contains 20 forms capturing information on separate HazMat Areas. These are separate Control Areas or Hazardous Occupancies.

Please note Control Areas and HazMat Areas are by definition, mutually exclusive. Control Areas are HazMat areas where quantities of HazMat not exceeding MAQs are located. Control Areas can be "Indoor" (spaces within buildings) and "Outdoor" (exterior areas). If a facility has only one Indoor Control Area, it is typically the entire building where HazMat is located. If a facility has multiple Indoor Control Areas, they will be separated from each other by fire-rated construction. Please note 2009 IFC Chapters 28 through 44 contain hazard-specific definitions and regulations that may affect the design of Control Areas (e.g., Section 3703.1.1 for Toxic materials).

Each HazMat area must be represented on a separate form (at least one has to be utilized). The first 4 rows on every utilized form must be filled out. If a second submittal is required, the remainder of the utilized forms must be completed. The completion of second, third, fourth, etc., HazMat Area forms is only required if there are additional Control Areas or Hazardous Occupancies in the facility.

This data is used on subsequent worksheets and in internal calculations comparing corresponding MAQs per HazMat area to tabulated requirements. This data is also used on the HMIS worksheet to reduce typographical errors identifying the HazMat areas where specific HazMat is located.

*1 HazMat Area ID is Required (use at least one letter in the ID):*

Each HazMat Area needs to be uniquely identified. A character string that makes sense for the facility should be used (5 to 6 characters is usually a good length) and it must contain at least one letter (a-z). It is inserted into a dropdown list on the HMIS worksheet (see Section IV.B.5 of these instructions). When the individual materials are listed on the HMIS worksheet, the corresponding HazMat Area identifier will be selected from the dropdown list. The amounts of HazMat are aggregated per HazMat Area elsewhere in the workbook. The HazMat identifiers used here must match those used on the facility graphics.

2 *Is HazMat Area [ID] inside a building or Outdoor?*

The identifier provided in item 1 above will be inserted in the question for item 2 (in the place of “[ID]”). This is a dropdown box with 2 selections: Indoor and Outdoor. Simply pick the appropriate condition. If it’s desired to clear this field – say in the case where it was completed accidentally – simply click in the cell and hit the delete key on the keyboard.

3 *Identify the story on which HazMat Area [ID] is located. Use negative numbers for basement levels; e.g., -2 for sub-basement, -1 for basement, 1 for 1st Story, etc.*

–OR–

*Insert 0 (zero) for Outdoor:*

The identifier provided in item 1 above will be inserted in the question for item 3 (in the place of “[ID]”). For a HazMat area located on a mezzanine, use the story in which the mezzanine is located. On sloping sites and in cases where a story is partially below grade, the story on which the HazMat Area is located may be determined from the code definitions. “Story Above Grade Plane” is defined in the IBC as, “any story having its finished floor surface entirely above grade plane, or in which the finished surface of the floor next above is:”

1. More than 6 feet above grade plane; or
2. More than 12 feet above the finished ground level at any point

The lowest story meeting this definition is the 1<sup>st</sup> story. The one above is the second story, etc. The total number of stories should be provided on the C/O and on the original construction permit for the building. Building Department Records may have these for buildings dating back to about 1960 (720.865.2790). The information requested in item 3 allows HMPA reviewers to correlate regulations regarding HazMat Area distribution with the actual locations of the HazMat areas in the facility. They’re also used to validate the facility graphic when one is required.

4 *Is the BUILDING in which HazMat Area [ID] is located sprinklered throughout?*

–OR–

*Leave blank or insert n/a for Outdoor*

The identifier provided in item 1 above will be inserted in the question for item 4 (in the place of “[ID]”). One of the two instructions italicized above will be presented based on the information provided in item 2 above. Select either “yes” or “no” for indoor HazMat Areas from the dropdown list, or input zero (or leave blank) for outdoor HazMat areas. “Sprinklered” means protected by a fire suppression system in compliance with NFPA 13. This information is used to determine whether the tabulated MAQs may be increased.

5 *Provide the area (sq ft) of HazMat Area [ID]:*

The identifier provided in item 1 above will be inserted in the question for item 5 (in the place of “[ID]”). Insert a real or integer number without commas. The information in item 5 is requested whether the HazMat Area is indoor or outdoor. This information is used by HMPA reviewers to verify compliance to area regulations in the codes and by emergency responders to refine their expectations if responding to the facility.

- 6 *If Explosion Control systems are provided, please describe what they are and the hazards they're mitigating (e.g., explosives, combustible dust, other HazMat, vapor mixtures that could develop under normal operations, etc.):*

This is a free-form text field. Explosions are one of the most severe hazards occupants and emergency responders can encounter. The codes have specific regulations for explosions from explosion venting to requiring separate detached buildings. This information is requested so HMPA reviewers can verify the specific code regulations and emergency responders can develop an appropriate response strategy.

- 7 *If Spill Control is provided, please describe, including mitigation mechanisms.*

This is a free-form text field. Spill control refers to the mitigation features and actions performed to prevent, stop, and clean up an accidental release of HazMat. In some cases Secondary Containment (see item 8 below) will provide mitigation. In most cases, water dilution by hand-held hoses, liquid-absorbing pellets, acid/base cancellation, high ventilation, etc. are performed manually by employees. The information in item 7 is requested so HMPA reviewers can verify the specific code regulations.

- 8 *If Secondary Containment is provided, please describe, including treatment systems and separation. [If Outdoor] Describe Drainage Control if present.*

This is a free-form text field. "Secondary Containment" is defined in the 2009 IFC as "That level of containment that is external to and separate from primary containment." Primary containment refers to the storage tank or processing vessel containing the HazMat. This information is requested so HMPA reviewers can verify the specific code regulations and emergency responders can refine their expectations if responding to the facility.

- 9 *Describe how HazMat Area [ID] is separated from adjacent building spaces. If by walls, floor, and ceiling, describe the construction including rating and number and types of openings (doors, duct penetrations, windows, etc.), whether they're automatic closing, etc.*

–OR–

*Describe the distance separation of HazMat Area [ID] from adjacent lot lines, buildings, and other storage*

The identifier provided in item 1 above will be inserted in the question for item 9 (in the place of "[ID]"). This is a free-form text field. Which question is presented depends on the data provided in item 2 above. This information is requested so HMPA reviewers can verify the specific code regulations and emergency responders can refine their expectations if responding to the facility.

#### *Use*

- 10 *Is HazMat Used, Processed, or Dispensed in HazMat Area ICA2?*

The identifier provided in item 1 above will be inserted in the question for item 10 (in the place of "[ID]"). This is a yes/no question. The choice is made from the dropdown list.

Text may be removed from this cell simply by highlighting the cell and hitting the delete key.

MAQs are tabulated in the codes separately for *use* and *storage*. “Use” is defined in the 2009 IFC as “Placing any material into action, including solids, liquids, and gases.” This includes dispensing, processing, handling (outside of the storage containers), applying, etc. This information is requested so HMPA reviewers can verify the specific code regulations and emergency responders can refine their expectations if responding to the facility.

*11 If HazMat is in Use in an Open System, please describe process(es) and identify limit, pressure, and temperature controls, and whether these are backed up by emergency power:*

“System” is defined in the 2009 IFC as “An assembly of equipment consisting of a tank, container or containers, appurtenances, pumps, compressors, and connecting piping.”

“Open System” is defined in the 2009 IFC as “The use of a solid or liquid hazardous material involving a vessel or system that is continuously open to the atmosphere during normal operations and where vapors are liberated, or the product is exposed to the atmosphere during normal operations. Examples of open systems for solids and liquids include dispensing from or into open beakers or containers, dip tank and plating tank operations.” This is a free-form text field. This information is requested so HMPA reviewers can verify the specific code regulations and emergency responders can refine their expectations if responding to the facility.

*12 If HazMat is in Use in a Closed System, please describe process(es) and identify limit, pressure, and temperature controls, and whether these are backed up by emergency power:*

MAQs are tabulated in the codes separately for *storage* and [in-]use. Further, *use* in an *open* system is distinguished from use in a *closed* system. “Closed System” is defined in the 2009 IFC as “The use of a solid or liquid hazardous material involving a closed vessel or system that remains closed during normal operations where vapors emitted by the product are not liberated outside of the vessel or system and the product is not exposed to the atmosphere during normal operations; and all uses of compressed gases. Examples of closed systems for solids and liquids include product conveyed through a piping system into a closed vessel, system or piece of equipment.” Systems operating under pressure are generally closed systems. This is a free-form text field. This information is requested so HMPA reviewers can verify the specific code regulations and emergency responders can refine their expectations if responding to the facility.

*13 If systems in the Hazardous Occupancy are backed up by emergency power, describe the source of emergency power (e.g., diesel generator):*

This is a free-form text field. Emergency power is provided in one of two ways. The dominate method is by diesel generator (natural gas generators are not permitted for required emergency power). The other method is by battery backup such as a uninterruptible power supply (UPS). Typically, UPS systems are provided to bridge the time gap between municipal disconnection and a generator picking up the full load. This

information is requested so HMPA reviewers can verify the specific code regulations and emergency responders can refine their expectations if responding to the facility.

### ***Storage***

#### ***14 Is HazMat Area [ID] used for Storage of HazMat?***

This is a yes/no question but a free-form text field is provided if the applicant desires to elaborate. MAQs are tabulated in the codes separately for *storage* and *use*. Further, *use* in an *open* system is distinguished from use in a *closed* system. “Storage” is defined in the 2009 IFC as “The keeping, retention or leaving of hazardous materials in closed containers, tanks, cylinders, or similar vessels; or vessels supplying operations through closed connections to the vessel.” This is a free-form text field. This information is requested so HMPA reviewers can verify the specific code regulations and emergency responders can refine their expectations if responding to the facility.

#### ***15 Describe storage arrangement and containers; e.g., portable tank, plastic containers, etc., on shelf, rack, pile, etc.:***

This is a free-form text field. Storage regulations vary considerably depending on the nature of the HazMat storage. Tabulated MAQs may be doubled for most HazMat if stored in specialized cabinets or enclosures (see sections 2703.8.5, 2703.8.7, etc. in the 2009 IFC). High-piled storage regulations may apply for storage above 6 feet (see definition of “*High-Piled Combustible Storage*” in Section 2302 of the 2009 IFC). Certain specific materials are exempted from broad provisions based on the type of container in which they’re stored (e.g., distilled spirits stored in wooden barrels or casks” in Section 2701 of the 2009 IFC). This information is requested so HMPA reviewers can verify the specific code regulations and emergency responders can refine their expectations if responding to the facility.

#### ***16 If Incompatible Materials are stored, describe the separation:***

This is a free-form text field. “Incompatible Materials” is defined in the 2009 IFC as “Materials that, when mixed, have the potential to react in a manner which generates heat, fumes, gases, or byproducts which are hazardous to life or property.” In order to prevent otherwise innocuous spills or discharges from becoming life- or health-threatening events, materials that meet this definition are required to be separated by rated construction or distance (see Section 2703.9.8 in the 2009 IFC). This information is requested so HMPA reviewers can verify the specific code regulations and emergency responders can refine their expectations if responding to the facility.

#### ***17 Are Gas Rooms provided?***

This is a yes/no question but a free-form text field is provided if the applicant desires to elaborate. “Gas Rooms” is defined in the 2009 IFC as “a separately ventilated fully enclosed room in which only compressed gases and associated equipment and supplies are stored.” They have specific construction requirements and are required to be provided in facilities where toxic and highly toxic compressed gas containers are not normally located in a gas cabinet or ventilated enclosure. If a gas container develops a leak, it will be relocated to a gas cabinet or exhausted enclosure in the gas room (see sections 2703.8.4 and 3704.2.2.3 of the 2009 IFC).

- [=] notification ≡ visual or audible signals emitted by a fire or emergency alarm system.
- [=] Location Code is typically the column line intersection identifying a specific location within a HazMat Area. The Location Code may be used to identify the location of a HazMat Area within a facility.

## 5 HMIS (Hazardous Materials Inventory Statement) Worksheet

This is where the inventory of materials regulated by the codes in a facility is collected and evaluated. The worksheet is set up so all materials in a facility may be listed in an order that makes sense to the operator. The hazards regulated by the IFC (as opposed to the specific material) are aggregated per HazMat area automatically on separate worksheets. It's important to note however that materials have to be listed by HazMat area; i.e., if the same material is located in two (say) different HazMat areas, it has to be listed twice, once for each.

The top row of the worksheet is used to present data pertinent to the applicant. It brings the date inserted for the HMR and the name of the facility over from the Contacts worksheet, identifies the version of the HMR workbook, identifies the line number location of the first ERR (error) in the IFC Classification column, identifies the groups of regulated hazards as “Physical” or “Health” (in accordance with the IFC), and labels the NFPA 704 placard columns. The second row of the worksheet contains the column names.

The general areas of the HMIS worksheet are differentiated by color. The data in the light orange columns are all calculated or brought over from information entered on the HazMat\_Areas worksheets. A “protected-cells” error will occur if the applicant attempts to insert data in these columns.

The HazMat Area ID column was set to grey-blue to {1} emphasize its importance (an error will occur if left blank), and {2} to indicate even though the data is applicant-inserted, it's limited to the values on the dropdown list that appears when a cell in this column is selected.

Except for these, the columns to the left of the double line (separating Excel columns “S” and “T”) are all applicant-input and deal with the material labels, general material characteristics, and quantities in use and storage.

The columns to the right of the first set of double lines under the headings “Physical Hazards” and “Health Hazards” are all applicant-input. These characterize the materials according to their IFC-regulated hazards.

The 4 columns to the right of these under the “NFPA 704 Placard” heading are also applicant-input. These characterize the materials according to the NFPA-regulated hazards. The columns are colored according to the corresponding placard diamond color;

i.e., blue for health, red for flammability, yellow for instability, and white for special hazards.

### **Material Inventory Reporting Guidelines:**

- An individual entry is required for each material on the HMIS worksheet.
- Separate entries are required for the same material if present in different States (of matter), different HazMat Areas, or in different container types.
- Generic materials located in the same HazMat Area with the same NFPA 704 hazard rating and in containers of gallon or less (10 lbs or less) may be reported as aggregates; e.g., paints having the same base, but different colors and containers sizes up to 1 gallon may be bulked as a single entry on the worksheet.
- The maximum quantity of materials on site at any given time shall be listed.
- The information needed to complete the HMIS worksheet can be found on the Material Safety Data Sheet (MSDS) and often on the product label for each material.
- Mixtures shall be classified in accordance with hazards of the mixture as a whole.
- If the hazards of the mixture are unknown, the hazards for each constituent component must be identified.
- List all the CAS numbers for the constituent components of mixtures that do not have their own CAS numbers.
- Materials in temporary locations (awaiting transport on shipping dock etc.) shall be reported as being in their primary or permanent location in the facility.

For a given material each column is completed as follows:

- **Line #**  
This cell is automatically generated (as opposed to applicant-inserted) on each row where a Product Name / Chemical Name is specified. Please note the distinction between Line # and Excel row number. Line numbers correspond to the listed materials and Excel row numbers begin at 1 at the top row of the worksheet and identify every row of the worksheet.
- **Outdoor / Indoor (Sprinkler)**  
This cell is auto-populated (as opposed to applicant-inserted). Once the HazMat Area ID is input (see below), one of three possible values will be inserted in the “Outdoor / Indoor (Sprinkler)” field based on the information provided on the HazMat\_Areas worksheets: **In-N** (indoor, non-sprinklered), **In-S** (indoor, sprinklered), and **Out** (Outdoor). An error (ERR) is generated if this information is not provided for a HazMat Area.
- **Floor**  
Once the HazMat Area ID is input (see below), this cell is auto-populated (as opposed to applicant-inserted) from the information provided on the HazMat\_Areas worksheets. As noted on those sheets, “1” indicates the first floor, “-1” indicates the highest basement level, “0” indicates outdoor. A warning is generated if the floor is not specified for a HazMat Area.
- **HazMat Area ID**  
Applicant-defined identifier for the areas in the facility where the respective material is located. These are introduced by the applicant on the HazMat\_Areas worksheets and

are presented in this cell on a dropdown list. The applicant simply selects the appropriate ID for the material being listed on the row. These ID's must be consistent with the labeling on the HMMP, EAP, and FCP (as applicable). An error (ERR) is generated if the HazMat Area ID is not provided or if a HazMat Area ID is inserted that is not included on the HazMat\_Areas worksheets.

- **Location Code**

Applicant-identified label for a specific location within a larger space. This is usually presented as the intersection of building column lines but in any case must be consistent with the labeling used on the HMMP, EAP, and FCP (as applicable). Examples include the location of a specific tank or container within a large HazMat Area, the location of a small Control Area within a large facility, the location of a specific dispensing operation among multiple dispensing operations, etc.

- **Product Name / Chemical Name**

This is the applicant-input label for the material listed on the row. Please note clicking on a cell in this column offers a dropdown selection of common materials. If a material is selected from the dropdown, the hazard selections (see below) in the row to the right of Excel column "S" will be limited to those specific to that material. Specific user information (e.g., quantities) still have to be inserted.

Sometimes the applicant will need to list a material that is on the common materials list but with hazards different than those preselected by DFD. In these cases, the applicant needs to change the name (even slightly) so it's different from the name in the common materials dropdown.

The two exceptions are batteries used for industrial vehicles (e.g., forklifts) and batteries used for UPS (uninterruptable power supply) systems. In order to be accounted for correctly, the dropdown value has to be selected for these items.

Inserting data in the row without a Product Name / Chemical Name identified causes an error (ERR).

- **CAS# (Chemical Abstracts Service registry number)**

These are unique identifiers assigned by CAS to every chemical disclosed in the open scientific literature including elements, isotopes, organic compounds, inorganic compounds, ions, organometalics, metals and materials of unknown, variable composition, or biological origin.

If the material is a compound or mixture without a unique CAS #, list the constituent CAS #'s and the percentage of each separated by semi-colons. For example, such a material with 4 constituent components would be displayed as: 122125-01-8, 30%; 7664-39-3, 35%; 78439-57-6, 25%; 1643-20-5 10%. Neither a warning nor an error is generated if the CAS# is not provided.

- **Manufacturer Name**

This information is used to verify hazards identified for a given material. It's also helpful in distinguishing properties associated with materials having identical names. Neither a warning nor an error is generated if the Manufacturer Name is not provided.

- **State**  
The physical state of matter of the respective material: CompGas (compressed gas), Solid, Liquid, Cryogenic (cryogenic fluid), and LiquefiedGas are all identified and regulated differently. These are selected from a dropdown list. The selection of “Units” will be constrained based on the State. A number of errors will be generated if State is not specified.
- **Container Type**  
These are presented on a dropdown list. This data mostly applies to flammable and combustible liquids and all are defined in the IFC or NFPA 30. Leave this cell blank if none of the selections apply. Neither a warning nor an error is generated if the Container Type is not provided.
  - **BnB** – Bag-in-Box – type of container used for the storage and transportation of liquids, consisting of a strong bladder (or plastic bag), usually made of several layers of metalized film or other plastics, seated inside a corrugated fiberboard box
  - **Cylinder** is defined in the IFC as a pressure vessel designed for pressures higher than 40 psia and having a circular cross section. It does not include a portable tank, multi-unit tank, car tank, cargo tank, or tank car.
  - **IBC** – intermediate bulk container (subset of PT) – is defined In NFPA 30 as any closed vessel having a liquid capacity not exceeding 793 gallons and intended for storing and transporting liquids, as defined in Title 49, Code of Federal Regulations, Parts 100 through 199 or in Part 6 of the United Nations “*Recommendations on the Transport of Dangerous Goods.*”
  - **CTN – Container** – is defined in the IFC as a vessel of 60 gallons or less in capacity used for transporting or storing hazardous materials. Pipes, piping systems, engines, and engine fuel tanks are not considered to be containers.
    - CTN-Metal
    - CTN-plastic
    - CTN-Glass
    - CTN-Fiber
    - CTN-Wood
  - **Magazine** is defined in the IFC as a building, structure or container, other than an operating building, approved for storage of explosive materials.
  - **Pig** – thick containers for storing and transporting radioactive samples
  - **PT – Portable Tank** – is defined in the IFC as a packaging of more than 60 gallon capacity and designed primarily to be loaded into or on or temporarily attached to a transport vehicle or ship and equipped with skids, mountings or accessories to facilitate handling of the tank by mechanical means. It does not include any cylinder having less than a 1,000-pound water capacity, cargo tank, tank car tank or trailers carrying cylinders of more than 1,000-pound water capacity.
    - PT-Metal
    - PT-Plastic
    - PT-Composite (usually metal-concrete, or metal-plastic)
    - PT/IBC-Metal
    - PT/IBC-Plastic
    - PT/IBC-Composite (usually metal-concrete, or metal-plastic)

- **ST – Stationary Tank** – is defined in the IFC as packaging designed primarily for stationary installations not intended for loading, unloading or attachment to a transport vehicle as part of its normal operation in the process of use. It does not include cylinders having less than a 1,000-pound water capacity.
  - ST-Metal
  - ST-Plastic
  - ST-Composite
- **Tank Car** is a railroad freight car designed to transport liquid and gaseous commodities in bulk. Tank cars are grouped by their type and not by their cargo. They can be pressurized, non-pressurized, insulated, non-insulated, and designed for single or multiple commodities. Tank cars may be lined with stainless steel, glass, plastic, rubber or specialized coatings for tank protection and product purity.
- **Tank Vehicle** is defined in the IFC as a vehicle other than a railroad tank car or boat, with a cargo tank mounted thereon or built as an integral part thereof, used for the transportation of flammable or combustible liquids, LP-gas or hazardous chemicals. Tank vehicles include self-propelled vehicles and full trailers and semitrailers, with or without motive power, and carrying part or all of the load.
- **Container Size**  
Used to identify the size of container(s) specified under Container Type in the same “Units” used to quantify the respective material (see below). Different container sizes should be listed on separate lines – even if the same material in the same area. Neither a warning nor an error is generated if the Container Type is not provided.
- **Units**  
The units of measure for the material listed. The Container Size (above) and Amounts in Use and Storage (below) all need to be specified in terms of the units identified in this cell. State (of matter – defined above) always needs to be identified first and the corresponding acceptable units will be presented in a dropdown menu in the Units cell. If the applicant has a material given in units that are not listed in the dropdown, they have to be converted to one of the values listed. For example, if the applicant’s material is in [dry] ounces, divide the quantity by 16 to get the equivalent pounds. Or if the quantity is in fluid ounces, divide by 128 to get the equivalent gallons, etc. A number of errors will be generated if Units is not specified. The complete list of possible units is:
  - gal – gallons (liquid volume)
  - lbs – pounds (dry weight)
  - lbs-aero – lbs of aerosols. Note this is only included in the dropdown if the State of CompGas (compressed gas) is identified. Aerosols are typically sold, purchased, etc., by weight in pounds but the contents of the cans themselves are a compressed gas.
  - cu ft – cubic feet. For compressed gas, this is expressed at STP (standard temperature and pressure: 32°F and 1 atmosphere)
  - primer – from Wikipedia, “...firearm ballistics...a component of pistol, rifle, and shotgun rounds. Upon being struck with sufficient force, a *primer* reacts chemically to produce heat which ignites the main propellant charge and fires the projectile.”

- milliCi – millicurie – a unit of radioactivity equal to one thousandth ( $10^{-3}$ ) of a curie; a curie is a unit of radioactivity, equal to the amount of a radioactive isotope that decays at the rate of  $3.7 \times 10^{10}$  disintegrations per second
- microCi – microcurie – a unit of radioactivity equal to one millionth ( $10^{-6}$ ) of a curie; a curie is a unit of radioactivity, equal to the amount of a radioactive isotope that decays at the rate of  $3.7 \times 10^{10}$  disintegrations per second
- **Amount in Use – Closed System**  
The quantity of the material must be entered in the identified Units (defined above). The IFC defines Closed System as the use of a solid or liquid hazardous material involving a closed vessel or system that remains closed during normal operations where vapors emitted by the product are not liberated outside of the vessel or system and the product is not exposed to the atmosphere during normal operations; and all uses of compressed gases. Examples of closed systems for solids and liquids include product conveyed through a piping system into a closed vessel, system or piece of equipment (see “Closed System” in 2009 IFC Section 202 and Tables 2703.1.1 [1-4]).
- **Amount in Use – Open System**  
The quantity of the material must be entered in the identified Units (defined above). The IFC defines an Open System as the use of a solid or liquid hazardous material involving a vessel or system that is continuously open to the atmosphere during normal operations and where vapors are liberated, or the product is exposed to the atmosphere during normal operations. Examples of open systems for solids and liquids include dispensing from or into open beakers or containers, dip tank and plating operations (see “Open System” in 2009 IFC Section 202 and Tables 2703.1.1 [1-4]).
- **Amount in Storage**  
The quantity of the material must be entered in the identified Units (defined above). The IFC defines the Hazardous Materials Storage as the keeping, retention or leaving of hazardous materials in closed containers, tanks, cylinders, or similar vessels; or vessels supplying operations through closed connections to the vessel (see “Storage, Hazardous” in IFC Section 2702 and Tables 2703.1.1 [1-4]).
- **Amount Total**  
This is a calculated value and applicant input is not permitted. It is simply the sum of Amount in Use – Closed System, Amount in Use – Open System, and Amount in Storage (see ).
- **Amount of "Amount in Storage" stored in Approved Cabinets**  
This is a subset of "Amount in Storage" and is not added to ‘Amount Total’. The Maximum Allowable Quantity (MAQ) of most HazMat stored in approved storage cabinets, day boxes, gas cabinets, exhausted enclosures, or listed safety cans is permitted to be doubled (see footnote “e” to 2009 IFC Table 2703.1.1(1), footnote “f” to 2009 IFC Table 2703.1.1(2), 2009 IFC Sections 2703.8.5, 2703.8.6, 2703.8.7, 2703.9.10, and 3404.3.2). The quantity in this field is used to assist the reviewer in determining MAQs and corresponding Occupancy Group classifications.
- **IFC Hazard**  
This is a calculated value and though applicant input is not permitted, the values are set by the types of hazards indicated by the applicant; i.e., “Phy” if a physical hazard is identified for the material in Excel columns “T” through “AF” (see top row above)

these), “Hlth” if a health hazard is identified for the material in Excel columns “AG” through “AO” (see top row above these), and “P+H” if both a physical and a health hazard are identified for the material. Health Hazard is defined in the 2009 IFC as a classification of a chemical for which there is statistically significant evidence that acute or chronic health effects are capable of occurring in exposed persons. For a definition of Physical Hazards, the IFC simply lists the hazards regulated in 2009 IFC Table 2703.1.1(1). NFPA 704 distinguishes Health Hazard from Flammability and Instability Hazards (implying the latter two hazards comprise the non-Health, or Physical, Hazards).

- **IFC Classification**

This is a calculated field and applicant input is not permitted. It contains an abbreviated summary of the specific hazards identified for the material by the applicant. To see the entire field when data exceeds a single line, select the “Format” menu on Excel’s “Home” tab and select the “AutoFit Row Height” line item on the “Format” menu. The height of the cell will be expanded to display all of its contents. In addition, an error tracking flag has been added (see the top row, Excel cell S1). If the text string “ERR= <Line #>” is contained in cell S1, then an error was flagged on the line identified by ‘Line #’ (note this is not the Excel row number but the line number generated by applicant input – see “Line #” above).

Errors are usually flagged for:

- incompatible units and states (e.g., cu ft associated with a liquid; gallons with a compressed gas; negative amounts, etc.),
- incompatible hazards and states (e.g., LPG identified as a solid; combustible fiber identified as a liquid, etc.), and
- incompatible hazards (e.g., a liquid identified as both flammable and combustible; an organic peroxide identified as an aerosol; etc.).

The ERR flag in cell S1 is sequential in that when the first identified occurrence has been cleared, the next will be identified until all have been addressed.

- **Aerosol**

This is the first column in the hazard categories and ironically it is a regulated class of materials and not a specific hazard regulated in IFC Chapter 27. Aerosols are regulated in 2009 IFC Chapter 28. Aerosols are defined in the IFC as a product that is dispensed from an aerosol container by a propellant. Units are limited to lbs and lbs-aero (see “lbs-aero above under Units). There are three (3) classes of aerosols defined according to their chemical heats of combustion:

- Level 1 ≡ aerosols with a total chemical heat of combustion less than or equal to 8,600 Btu/lb (20 kJ/g)
- Level 2 ≡ aerosols with a total chemical heat of combustion greater than 8,600 Btu/lb (20 kJ/g) and less than 13,000 Btu/lb (30 kJ/g)
- Level 3 ≡ aerosols with a total chemical heat of combustion greater than 13,000 Btu/lb (30 kJ/g)

When aerosols are identified, only the quantity of aerosols is aggregated on the invoice sheet. Other hazards identified in the same row with an aerosol classification – if

permitted – will be considered information only and will not be invoiced. An error will be generated when incompatible hazards are identified with aerosols such as explosives, combustible fibers, biohazards, highly toxics, etc. Identifying some health hazards (e.g., irritant) will not generate an error but again, will not be aggregated on the invoice.

- **Ammunition**

This material is regulated under IFC Chapter 33 and has subcategories of Small Arms and Large Arms with only the State of “Solid” and the Units of “primer” permitted. Also, an error will be generated if any other hazard is identified. Small Arms are defined as any cartridge for propellant-actuated devices including shotgun, rifle, or pistol cartridges. Large Arms are typically associated with military ammunition containing bursting charges or incendiary, trace, spotting, or pyrotechnic properties. Like Aerosols, Ammunition is a regulated class of materials and not a specific hazard regulated in IFC Chapter 27.

- **Combustible Fiber**

This hazard is regulated under 2009 IFC Chapter 29 and has subcategories of “Loose” and “Baled”. Only the State of “Solid” with Units of “cu ft” (cubic feet) are permitted. An error will be generated if any other hazard is identified in a row where a Combustible Fiber hazard has been selected. Combustible Fiber is defined as readily ignitable and free-burning materials in a fibrous or shredded form such as cocoa fiber, cloth, cotton (does not include densely packed baled cotton), excelsior, hay, hemp, henequen, istle, jute, kapok, oakum, rags, sisal, Spanish moss, straw, tow, wastepaper, certain synthetic fibers or other like materials.

- **Combustible Liquid**

Combustible and Flammable Liquids are distinct categories of hazards but are both regulated in 2009 IFC Chapter 34. Combustible Liquids are generally defined in the IFC as liquids, other than liquefied gases or cryogenic fluids, having a closed cup flash point at or above 100°F. The IFC further defines three (3) classes of Combustible Liquids:

- Class 2 ≡ liquids having a closed cup flash point at or above 100°F and below 140°F;
- Class 3A ≡ liquids having a closed cup flash point at or above 140°F and below 200°F;
- Class 3B ≡ liquids having a close cup flash point at or above 200°F.

In order to accommodate materials that are semi-solid (such as shortening or Sterno) or combustible-liquid impregnated solids (such as Wet Wipes), Combustible 3B liquids are now permitted to be identified as “Solid” and quantified in pounds.

- **Explosive / Blasting Agent**

These hazards are regulated under 2009 IFC Chapter 33. They are solid or liquid with units of pounds.

Blasting Agent is defined in the IFC as a material or mixture consisting of fuel and oxidizer, intended for blasting provided that the finished products, as mixed for use or shipment, cannot be detonated by means of a No. 8 test detonator when unconfined. Blasting agents are labeled and placarded as a Class 1.5 material by the US DOTn.

Explosive is defined in the IFC as a chemical compound, mixture, or device, the primary or common purpose of which is to function by explosion. The term includes, but is not limited to, dynamite, black powder, pellet powder, initiating explosives, detonators, safety fuses, squibs, detonating cord, igniter cord, igniters and display fireworks, 1.3G (Class B, Special).

The current system of explosive classification applied by UN/DOTn identifies six (6) divisions of Class 1 explosives (noting the G specifies the further limitation that the material is a pyrotechnic substance or article containing a pyrotechnic substance and similar materials):

- Division 1.1 ≡ explosives that have a mass explosion hazard. A mass explosion is one that affects almost the entire load instantaneously;
- Division 1.2 ≡ explosives that have a projection hazard but not a mass explosion hazard;
- Division 1.3 ≡ explosives that have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard;
- Division 1.4 ≡ explosives that pose a minor explosion hazard. The explosive effects are largely confined to the package and no projection of fragments of appreciable size or range is to be expected. An external fire must not cause virtually instantaneous explosion of almost the entire contents of the package;
- Division 1.4G ≡ small fireworks devices containing restricted amounts of pyrotechnic composition designed primarily to produce visible or audible effects by combustion. Such 1.4G fireworks which comply with the construction, chemical composition and labeling regulations for the DOTn for Fireworks, UN 0336, and the U.S. Consumer Product Safety Commission as set forth in CPSC 16 CFR: Parts 1500 and 1507, are not explosive materials for the purpose of this code;
- Division 1.5 ≡ very insensitive explosives. This division is comprised of substances that have a mass explosion hazard but which are so insensitive that there is very little probability of initiation or of transition from burning to detonation under normal conditions of transport;
- Division 1.6 ≡ extremely insensitive articles which do not have a mass explosion hazard. This division is comprised of articles that contain only extremely insensitive detonating substances and which demonstrate a negligible probability of accidental initiation or propagation.

- **Flammable**

This hazard includes Flammable Solids (regulated by 2009 IFC Chapter 36), Flammable Cryogenic Fluids (regulated by 2009 IFC Chapter 35), Flammable Liquefied Gases (regulated by 2009 IFC Chapter 35 – other than LPG, see below), Flammable Compressed Gases (regulated by 2009 IFC Chapter 30), and Flammable

Liquids (regulated by 2009 IFC Chapter 34).

The specific hazard category in this list, and the possible selection of Units, is determined by the State input by the applicant.

Unless radioactive, an error will be generated if Flammable Solid is identified with Units other than pounds (lbs). Flammable Solids are regulated in 2009 IFC Chapter 36 and are defined as solids other than blasting agents or explosives, that are capable of causing fire through friction, absorption of moisture, spontaneous chemical change or retained heat from manufacturing or processing, or which have an ignition temperature below 212°F or which burn so vigorously and persistently when ignited as to create a serious hazard. A chemical shall be considered a flammable solid as determined in accordance with the test method of CPSC 16 CFR: Part 1500.44, if it ignites and burns with self-sustained flame at a rate greater than 0.1 inch per second along a major axis.

Unless radioactive, an error will be generated if Cryogenic Flammable [fluid] is identified with Units other than gallons (gal). Cryogenic Fluids are regulated in 2009 IFC Chapters 32 and 35. Flammable Cryogenic Fluid is defined in the IFC as a cryogenic fluid that is flammable in its vapor state. Cryogenic Fluid is defined in the IFC as a fluid having a boiling point lower than -130°F at 1 atmosphere pressure.

Unless radioactive, an error will be generated if a Flammable Liquefied Gas is identified with Units other than pounds (lbs). Flammable Gases are regulated in 2009 IFC Chapter 35. Flammable Liquefied Gas is defined in the IFC as a liquefied compressed gas which, under a charged pressure, is partially liquid at a temperature of 68°F or less and which is flammable.

Unless radioactive, an error will be generated if Flammable [Compressed] Gas is identified with Units other than cubic feet (cu ft) at STP (Standard Temperature and Pressure of 32°F and 1 atmosphere). Flammable Gases are regulated in 2009 IFC Chapter 35 Flammable Gas is defined in the IFC as a material with a boiling point of 68°F or less at 1 atmosphere of pressure that:

1. Is ignitable at 68°F or less and 1 atmosphere of pressure (determined in accordance with ASTM E 681) when in a mixture of 13% or less by volume with air, or
2. Has a flammable range at 68°F or less and 1 atmosphere (determined in accordance with ASTM E 681) with air of at least 12%, regardless of the lower limit.

Unless radioactive, an error will be generated if Flammable Liquids are input in Units other than pounds or gallons. However, since Flammable Liquids are regulated in gallons, the worksheet will convert pounds to gallons (at a rate of 10 lbs/gal) to generate the invoice. Flammable and Combustible Liquids are distinct categories of hazards but are both regulated in 2009 IFC Chapter 34.

Flammable Liquids are defined generally in the IFC as liquids other than liquefied gases or cryogenic fluids, having a closed cup flash point below 100°F. Flammable Liquids are further categorized into a group known as Class 1 liquids. The Class 1 category is subdivided as follows:

- Class 1A ≡ liquids having a closed cup flash point below 73°F and having a boiling point below 100°F;
- Class 1B ≡ liquids having a closed cup flash point below 73°F and having a boiling point at or above 100°F;
- Class 1C ≡ liquids having a close cup flash point at or above 73°F and below 100°F.

- **Inert Gas**

These may be input with units corresponding to the States associated with Compressed Gases, Liquefied Gases, and Cryogenic Fluids: cubic feet, pounds, and gallons (respectively). Inert Gases are regulated in 2009 IFC Section 3007 and are defined in the IFC as a gas capable of reacting with other materials only under abnormal conditions such as high temperatures, pressures and similar extrinsic physical forces. Within the context of the code, inert gases do not exhibit either physical or health properties as defined (other than the physical hazard of acting as a simple asphyxiant) or hazard properties other than those of a compressed gas (including cryogenic). Some of the more common inert gases include argon, helium, neon, nitrogen, and xenon. The IFC does not establish MAQs for Inert Gases but the Denver Amendments to the IFC (IFCA) do establish permit amounts.

- **Liquefied Petroleum Gas (LPG)**

LPG is regulated in 2009 IFC Chapter 38. Though it is a flammable liquefied gas, LPG is regulated as a class of materials and not by any specific hazards identified in IFC Chapter 27. If other hazards are identified by the applicant in association with a material identified as an LPG, those other hazards are not aggregated on the invoice. An error will be generated if the State is identified as anything other than Liquefied Gas. The Units have to be in pounds.

LPG is defined in the IFC as a material which is composed predominantly of the following hydrocarbons or mixtures of them: propane, propylene, butane (normal butane or isobutene), and butylenes.

- **Organic Peroxide**

Organic Peroxides are regulated in 2009 IFC Chapter 39. They are either a Solid input with Units of pounds, or a Liquid input with Units of either pounds or gallons. The IFC regulates Liquid Organic Peroxides in pounds so if input as gallons, the quantity will be converted to pounds on the invoice at a rate of 10 lbs/gallon. Organic Peroxides are defined in the IFC as an organic compound that contains the bivalent –O-O- structure and which may be considered to be a structural derivative of hydrogen peroxide where one or both of the hydrogen atoms have been replaced by an organic radical. Organic peroxides can present an explosion hazard (detonation or deflagration) or they can be shock sensitive. They can also decompose into various unstable compounds over an extended period of time.

- Class 1 ≡ describes those formulations that are capable of deflagration but not detonation.
  - Class 2 ≡ describes those formulations that burn very rapidly and that pose a moderate reactivity hazard.
  - Class 3 ≡ describes those formulations that burn rapidly and that pose a moderate reactivity hazard.
  - Class 4 ≡ describes those formulations that burn in the same manner as ordinary combustibles and that pose a minimal reactivity hazard.
  - Class 5 ≡ describes those formulations that burn with less intensity than ordinary combustibles or do not sustain combustion and that pose no reactivity hazard.
  - UD ≡ Unclassified Detonable Organic Peroxides that are capable of detonation. These peroxides pose an extremely high-explosion hazard through rapid explosive decomposition.
- **Oxidizer**  
Oxidizers are regulated in 2009 IFC Chapter 40. They may be Solid (pounds), Liquid (regulated in pounds – if input in gallons, converted to pounds at 10 lbs/gallon for invoice), Compressed Gas (cubic feet at STP), Liquefied Gas (pounds), or Cryogenic Gas (gallons). Oxidizers are defined in the 2009 IFC as a material that readily yields oxygen or other oxidizing gas, or that readily reacts to promote or initiate combustion, can result in vigorous self-contained decomposition.
    - Class 4 ≡ an oxidizer that can undergo an explosive reaction due to contamination or exposure to thermal or physical shock and that causes a severe increase in the burning rate of combustible materials with which it comes into contact. Additionally, the oxidizer causes a severe increase in the burning rate and can cause spontaneous ignition of combustibles.
    - Class 3 ≡ an oxidizer that causes a severe increase in the burning rate of combustible materials with which it comes in contact.
    - Class 2 ≡ an oxidizer that will cause a moderate increase in the burning rate of combustible materials with which it comes in contact.
    - Class 1 ≡ an oxidizer that does not moderately increase the burning rate of combustible materials.
  - **Pyrophoric**  
Pyrophoric Materials are regulated in 2009 IFC Chapter 41. They may be Solid (pounds), Liquid (regulated in pounds – if input in gallons, converted to pounds at 10 lbs/gallon for invoice), or Compressed Gas (cubic feet at STP). Pyrophoric Materials are defined in the IFC as chemicals with an autoignition temperature in air, at or below 130°F.
  - **Unstable (Reactive) Materials**  
Unstable (Reactive) Materials are regulated in 2009 IFC Chapter 41. They may be Solid (pounds), Liquid (regulated in pounds – if input in gallons, converted to pounds at 10 lbs/gallon for invoice), or Compressed Gas (cubic feet at STP). Unstable (Reactive) Materials are defined in the IFC as materials, other than explosives, which in the pure state or as commercially produced, will vigorously polymerize, decompose, condense or become self-reactive and undergo other violent chemical changes, including

explosion, when exposed to heat, friction or shock, or in the absence of an inhibitor, or in the presence of contaminants, or in contact with incompatible materials. Unstable (Reactive) Materials are subdivided as follows:

- Class 4 ≡ materials that in themselves are readily capable of detonation or explosive decomposition or explosive reaction at normal temperatures and pressures. This class includes materials that are sensitive to mechanical or localized thermal shock at normal temperatures and pressures.
- Class 3 ≡ materials that in themselves are capable of detonation or of explosive decomposition or explosive reaction but which require a strong initiating source or which must be heated under confinement before initiation. This class includes materials that are sensitive to thermal or mechanical shock at elevated temperature and pressure.
- Class 2 ≡ materials that in themselves are normally unstable and readily undergo violent chemical change but do not detonate. This class includes materials that can undergo chemical change with rapid release of energy at normal temperatures and pressures, and that can undergo violent chemical change at elevated temperatures and pressures.
- Class 1 ≡ materials that in themselves are normally stable but which can become unstable at elevated temperatures and pressure.

- **Water Reactive**

Water-Reactive Solids and Liquids are regulated in 2009 IFC Chapter 44. Solids are regulated and required to be input in pounds. Liquids are regulated in pounds but may be input in gallons. The quantities will be converted to pounds at the rate of 10 lbs/gallon before inclusion in the invoice. The IFC defines Water-Reactive Material as a material that explodes; violently reacts; produces flammable, toxic or other hazardous gases; or evolves enough heat to cause autoignition or ignition of combustibles upon exposure to water or moisture. Water-reactive materials are subdivided as follows:

- Class 3 ≡ materials that react explosively with water without requiring heat or confinement.
- Class 2 ≡ materials that react violently with water or have the ability to boil water. Materials that produce flammable, toxic or other hazardous gases, or evolve enough heat to cause autoignition or ignition of combustibles upon exposure to water or moisture.
- Class 1 ≡ materials that react violently with water with some release of energy, but violently.

- **Biohazard**

Biohazard is defined in the 2011 Denver Amendments to the IFC (IFCA) as an infectious agent or hazardous biological material that presents a risk or potential risk to the health of humans, animals, or the environment. The risk can be direct through infection or indirect through damage to the environment. Biohazardous materials include certain types of recombinant DNA; organisms and viruses infectious to humans, animals, or plants (e.g., parasites, viruses, bacteria, fungi, prions, rickettsia); and biologically active agents (i.e., toxins, allergens, venoms) that may cause disease in other living organisms or cause significant impact on the environment or community.

Since BioHazards are not regulated in the IFC, there are no MAQs established. The permit amounts are established in the IFCA. Permittable States are Solid (pounds), Liquid (pounds or gallons – aggregated in gallons on the invoice; pounds are converted to gallons at 0.1 gallons/lb), Compressed Gas (cubic feet at STP), or Liquefied Gas (pounds).

- **Carcinogen**

Carcinogen is defined in the 2011 Denver Amendments to the IFC (IFCA) as a substance that causes the development of cancerous growths in living tissue. A chemical is considered to be a carcinogen if:

1. it has been evaluated by the International Agency for Research on Cancer (IARC) and found to be a carcinogen or potential carcinogen, or
2. it is listed as a carcinogen or potential carcinogen in the latest edition of the Annual Report on Carcinogens published by the National Toxicology Program, or
3. it is regulated by OSHA as a carcinogen.

Chemical mixtures (generally zero-prefixed CAS numbered items) will be indicated as being carcinogenic if the mixture contains a carcinogen in a concentration of 0.1% or more as indicated on the MSDS.

Since Carcinogens are not regulated in the IFC, there are no MAQs established. The permit amounts are established in the IFCA. Permittable States are Solid (pounds), Liquid (pounds or gallons – aggregated in gallons on the invoice; pounds are converted to gallons at 0.1 gallons/lb), Compressed Gas (cubic feet at STP), Liquefied Gas (pounds), or Cryogenic Fluid (gallons).

- **Corrosive**

Corrosive Materials are regulated in 2009 IFC Chapter 31. Permittable States are Solid (pounds), Liquid (gallons or pounds; regulated in gallons – if input in pounds, converted to gallons at 0.1 gallons/lb for invoice), Compressed Gas (cubic feet at STP), and Liquefied Gas (pounds). Corrosive is defined in the IFC as a chemical that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the point of contact. A chemical shall be considered corrosive if, when tested on the intact skin of albino rabbits by the method described in DOTn 49 CFR 173.137, such chemical destroys or changes irreversibly the structure of the tissue at the point of contact following an exposure period of 4 hours. This term does not refer to action on inanimate surfaces.

- **Highly Toxic**

Highly Toxic Materials are regulated in 2009 IFC Chapter 37. Permittable States are Solid (pounds), Liquid (gallons or pounds; regulated in gallons – if input in pounds, the quantity is converted to gallons at 0.1 gallons/lb for invoice), Compressed Gas (cubic feet at STP), and Liquefied Gas (pounds). Highly Toxic is defined in the IFC as a material which produces a lethal dose or lethal concentration which falls within any of the following categories:

1. A chemical that has a median lethal dose (LD<sub>50</sub>) of 50 milligrams or less per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.
2. A chemical that has a median lethal dose (LD<sub>50</sub>) of 200 milligrams or less per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs with 24 hours) with the bare skin of albino rabbits weighing between 2 and 3 kilograms each.
3. A chemical that has a median lethal concentration (LC<sub>50</sub>) in air of 200 parts per million by volume or less of gas or vapor, or 2 milligrams by volume or less of gas or vapor, or 2 milligrams per liter or less of mist, fume or dust, when administered by continuous inhalation for one hour (or less if death occurs within 1 hour) to albino rats weighing between 200 and 300 grams each.

Mixtures of these materials with ordinary materials, such as water, might not warrant classification as highly toxics. While this system is basically simple in application, any hazard evaluation that is required for the precise categorization of this type of material shall be performed by experienced, technically competent persons.

- **Irritant**

Irritant is defined in the 2009 IFC as a chemical which is not corrosive, but which causes a reversible inflammatory effect on living tissue by chemical action at the site of contact. A chemical is a skin irritant if, when tested on the intact skin of albino rabbits by the methods of CPSC 16 CFR Part 1500.41 for an exposure of four or more hours or by other appropriate techniques, it results in an empirical score of 5 or more. A chemical is classified as an eye irritant if so determined under the procedure listed in CPSC 16 CFR Part 1500.42 or other approved techniques. The IFC does not establish a MAQ for Irritants but the 2011 Denver Amendments to the 2009 IFC (IFCA) do establish permit amounts.

Permittable States for Irritants are Solid (pounds), Liquid (gallons or pounds; regulated in gallons – if input in pounds, the quantity is converted to gallons at 0.1 gallons/lb for invoice), Liquefied Gas (pounds), Compressed Gas (cubic feet at STP), and Cryogenic (gallons).

- **Other Health Hazard (OHH)**

OHH materials are regulated in the 2011 Amendments to the 2009 IFC (IFCA). OHH is defined in the IFCA as a hazardous material which affects target organs of the body including but not limited to those materials which produce liver damage, kidney damage, damage to the nervous system, act on the blood to decrease hemoglobin function, deprive the body tissue of oxygen, or affect reproductive capabilities including mutations (chromosomal) or teratogens (effects on fetuses). The IFC does not establish a MAQ for OHH but the 2011 Denver Amendments to the 2009 IFC (IFCA) do establish permit amounts.

Permitted States for OHH materials are Solid (pounds), Liquid (pounds or gallons; OHH materials are regulated in gallons – if input in pounds, the quantity is converted to gallons at 0.1 gallons/lb for invoice), Liquefied Gas (pounds), Compressed Gas (cubic feet at STP), and Cryogenic (gallons).

- **Radioactive**

Radioactive materials are regulated in the 2009 Denver Amendments to the 2009 IFC (IFCA). Radioactive material is defined in the IFCA as any material or combination of materials that spontaneously emits ionizing radiation. An error will be generated if a material is identified as a radioactive hazard and the Units are other than millicuries or microcuries. No other hazards permitted to identified with Radioactive materials are aggregated on the invoice. Three (3) types of radiation identified:

- **Alpha** The alpha particle is a helium atom and contains two neutrons and two protons. Because the alpha particles are relatively large and heavy, alpha rays are not very penetrating and are easily absorbed. The alpha particle emitter will not penetrate the outer layer of human skin, but is dangerous if inhaled or swallowed. The living cells forming the lining of the lungs or internal organs may be changed (mutated) or killed. Radon, the gas produced by the decay of radium-226, emits alpha particles.
- **Beta** Beta rays are much lighter energy particles than alpha rays. The beta particle is an energetic electron given off by the nucleus of unstable isotopes trying to restore an energy balance. They can be stopped by an aluminum sheet a few millimeters thick or by 3 meters of air. Because the beta particle is much smaller than the alpha particle (about 8,000 times smaller), it is capable of penetrating much deeper into living matter. Each encounter with a living cell is likely to damage some of the chemical links or cause some permanent genetic change in a cell nucleus.
- **Gamma** Gamma rays are very high energy. The gamma “particle” is actually a photon or light wave in the same electromagnetic family as light and x-rays, but has much more energy and is much more harmful. Gamma ray sources are used to find flaws in pipes and vessels and to check the integrity of welds in steel.

Two (2) types of containers or systems are identified for the three types of radiation: Sealed (S) and Not-Sealed (NS). The six (6) combinations are therefore: S-Alpha, NS-Alpha, S-Beta, NS-Beta, S-Gamma, and NS-Gamma.

- **Sensitizer**

Sensitizer is defined in the 2009 IFC as a chemical that causes a substantial proportion of exposed people or animals to develop an allergic reaction in normal tissue after repeated exposure to the chemical. The IFC does not establish a MAQ for Sensitizers but the 2011 Denver Amendments to the 2009 IFC (IFCA) do establish permit amounts.

Permittable States for Sensitizers are Solid (pounds), Liquid (gallons or pounds; regulated in gallons – if input in pounds, the quantity is converted to gallons at 0.1 gallons/lb for invoice), Liquefied Gas (pounds), Compressed Gas (cubic feet at STP), and Cryogenic (gallons).

- **Toxic**

Toxic materials are regulated in 2009 IFC Chapter 37. Permittable States are Solid (pounds), Liquid (gallons or pounds; regulated in gallons – if input in pounds, the quantity is converted to gallons at 0.1 gallons/lb for invoice), Compressed Gas (cubic

feet at STP), and Liquefied Gas (pounds). The IFC defines Toxic as a chemical falling within any of the following categories:

- 1. A chemical that has a median lethal dose (LD<sub>50</sub>) of more than 50 milligrams per kilogram, but not more than 500 milligrams per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.
  - 2. A chemical that has a median lethal dose (LD<sub>50</sub>) of more than 200 milligrams per kilogram but not more than 1,000 milligrams per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between 2 and 3 kilograms each.
  - 3. A chemical that has a median lethal concentration (LC<sub>50</sub>) in air of more than 200 parts per million but not more than 2,000 parts per million by volume of gas or vapor, or more than 2 milligrams per liter but not more than 20 milligrams per liter of mist, fume, or dust, when administered by continuous inhalation for 1 hour (or less if death occurs within 1 hours) to albino rats weighing between 200 and 300 grams each.
- **NFPA 704 Health Hazard**
  - **NFPA 704 Flammability Hazard**
  - **NFPA 704 Instability Hazard**
  - **NFPA 704 Special Hazard**  
In the pre-2011 version, this column included entries for organic peroxides, water-reactives, corrosives, radioactives, and oxidizers. NFPA 704 limits the list to water-reactives, oxidizers, combination water-reactive/oxidizers, and simple asphyxiants.

## 6 Aggregate Worksheet

### C Hazardous Materials Management Plan (HMMP)

The HMMP provides emergency personnel graphic layouts of the vicinity, site, and building in which the facility is located and descriptions of the operations taking place. HMMP's are crucial to the emergency planning for both the facility and the local emergency response authority. The HMMP is also extremely helpful to FCO's during annual inspections to confirm compliance and is now often used by facility operators to manage their day-to-day HazMat inventories and use operations. Typically, HMMP's are only required for facilities with a quantity of HazMat in excess of a permit amount, but at the discretion of the FCO may be required for any facility if unusual circumstances warrant.

A copy of the HMMP is required to be maintained onsite together with copies of the HMR, HazMat Operational Permit and all other associated documents (e.g., EAP) and available for review by the FCO during any site inspection.

The primary components of HMMP's are graphics supplemented by descriptions of the operations and emergency prevention and response elements in effect at the facility.

## 1. Graphics:

A minimum of one and a maximum of three graphics are required for each facility depending on the size and migration hazards associated with the HazMat there. A facility floor plan is required in all HMMP's and in addition, a 500-foot vicinity map and a site plan may be required.

In creating the graphics, it is usually best to orient them so north points to the top of the page. Wherever possible, standard map symbols should be used but in any case legends with clear definitions of the symbols, hatching, shading, etc. incorporated in the graphics are necessary. HazMat storage and use areas are specifically identified on each graphic.

All graphics shall contain the following information:

- ✓ facility name
- ✓ addresses of all depicted buildings
- ✓ scale
- ✓ legend of symbols, line types, shading, and hatching
- ✓ north orientation arrow
- ✓ date the plans were last drawn/revised

Each graphic is submitted in a separate Adobe pdf file.

### a. 500-foot Vicinity Map

This graphic is required for facilities having to file Tier 2 reports under the federal Superfund Amendments and Reauthorization Act (SARA) Title 3, aka "Emergency Planning and Right to Know Act of 1986", see:

<http://www.cdphe.state.co.us/oeis/sara/index.html>.

The map encompasses an area extending 500 feet out from the facility property lines and includes:

- i. all streets, alleys, and access roads identified by name;
- ii. all fire protection features including fire hydrants and fire lanes;
- iii. outlines of all buildings within the area labeled with the address, company name, type of business, and height in stories;
- iv. identification of the facility;
- v. locations of all storm drainage components including (not limited to) storm drains, detention ponds, flood plains, ditches, surface water bodies;
- vi. the location(s) where liaison(s) will meet emergency responders;
- vii. the meeting point locations for facility occupants after evacuation;
- viii. other features required by the fire code official.

**b. Facility Site Plan**

A site plan is required for all facilities comprised of multiple buildings or outdoor HazMat areas. The site plan need only extend to the centerlines of adjacent rights-of-way (RW) and private property lines but has to include:

- i. the identification by name of all surrounding streets, alleys, and access roads;
- ii. the outlines of all buildings, sheds, and other permanent (erected for more than 180 days per year) structures labeled with the building name, address, type of use, and height in stories;
- iii. exterior storage areas and nature of storage;
- iv. the location of all aboveground and underground tanks, their purpose (e.g., secondary containment, or generator fuel), their contents, and their appurtenances including fill locations, sumps, vaults, below-grade treatment systems, piping, etc.;
- v. all HazMat areas labeled with the same identifiers used on the HMR HazMat\_Areas and HMIS worksheets;
- vi. the aggregate NFPA 704 hazard placards for each outdoor HazMat area and each structure containing a HazMat area;
- vii. all fire protection features including fire hydrants and fire lanes;
- viii. locations of all storm drainage components including (not limited to) storm drains, detention ponds, flood plains, ditches, surface water bodies;
- ix. access ways, parking lots, internal walkways, chemical loading areas, and equipment cleaning areas;
- x. emergency and safety equipment such as generators, onsite emergency vehicles, etc.;
- xi. the location(s) where liaison(s) will meet emergency responders;
- xii. the meeting point locations for facility occupants after evacuation;
- xiii. other features required by the fire code official.

**c. Facility Floor Plans**

A floor plan is required for each building at the facility containing a quantity of HazMat in excess of a permit amount. The graphic extends to the perimeter of all usable areas covered by a roof and depicts/denotes (as applicable):

- i. all exterior access and egress openings (e.g., man-doors, overhead doors, windows, etc.);
- ii. the ingress and egress points and corridors to/from all areas;
- iii. all rooms numbers;
- iv. the general uses of areas and rooms within the building other than those involving HazMat (e.g., offices, warehouse, paint booths, kitchen, laboratory, manufacturing, parking, etc.);
- v. all of the utility areas (e.g., communication, electrical, water, gas, etc.) and shutoff locations;
- vi. all storage layouts including (not limited to) racks, piles, shelves, bins, etc. with the aisles widths and the storage heights identified;
- vii. all stairs with the unique designations for each used at the facility;
- viii. all elevators with the unique designation for each used at the facility;

- ix. all elevator machine rooms;
- x. roof access;
- xi. all trash/linen rooms/chutes;
- xii. all aboveground and underground tanks, their purpose (e.g., secondary containment, generator fuel, etc.), their contents, and their appurtenances including fill locations, sumps, vaults, below-grade treatment systems, piping, etc.;
- xiii. all areas of emergency function, e.g., areas of refuge, fire command center, etc.;
- xiv. the locations of all emergency equipment including fire pumps, sprinkler risers, FDCs, fire department hose connections, wall hydrants, vent control panels, smoke exhaust control panels, emergency generators, fire extinguishers, manual pull stations, fire alarm control panel(s), special suppression system control panel(s), etc.;
- xv. all areas with special suppression systems; e.g., FM-200, UL-300, pre-action, etc.;
- xvi. fuel fill locations for emergency generators, diesel fire pumps, etc. identify fuel type and tank size;
- xvii. all HazMat areas all HazMat areas labeled by type (i.e., Control Area or Hazardous Occupancy) and by operation (e.g., handling, storage, dispensing, medical gas storage, battery charging, etc.);
- xviii. the aggregate NFPA 704 hazard placards for each HazMat area;
- xix. the location(s) where liaison(s) will meet emergency responders;
- xx. the meeting point locations for facility occupants after evacuation;
- xxi. other features required by the fire code official.

## 2. Description of Operations

A narrative description of the operations, inspections, training, and contingency planning taking place at the facility is required as part of the HMMP.

### a. General Information

The facility name, business name (if different), a brief description of the HazMat operations, the total number of employees, the hours of operation, the names and emergency contact information of designated representatives, and any pertinent information emergency responders should be aware of are required at the beginning of the HMMP. Some of this information is also required in the HMR but is duplicated here for consistency and convenience.

### b. Hazardous Materials Handling

A description of all activities involving the handling of HazMat between the storage areas and manufacturing processes demonstrating they are conducted in a manner to prevent the accidental release of such materials is required.

### c. Chemical Compatibility and Separation

A description of the equipment, features, systems, procedures, protocols, controls, signs and other methods used to ensure separation and protection of stored materials from



factors which may cause accidental ignition or reaction of ignitable or reactive materials is required.

**d. Monitoring Program**

A description of the emergency alarm systems and the location, type, manufacturers' specifications, and suitability of monitoring methods for the HazMat in each facility is required.

**e. Inspection and Record Keeping**

A description of the schedules and procedures for inspecting, testing, and maintaining monitoring, safety, and emergency equipment, features, and systems implemented to prevent accidents, malfunctions, deterioration, operating errors, and poor housekeeping that may cause unauthorized releases of HazMat is required.

A copy of the formal written procedures followed for inspecting the facility including the inspection check sheet used in conjunction with routine inspections is required.

Copies of the completed check sheets are required demonstrating in-house inspections are conducted at a frequency appropriate to detect problems prior to a release. The date, time and location of each inspection, noting any problems and the corrective actions taken, name of inspector and the countersignature of the facility safety manager are required to be recorded on the check sheet.

**f. Employee Training**

A description of the training program conducted to prepare employees to safely handle HazMat on a daily basis and during emergencies is required including the record keeping procedures for documenting the training given to individual employees.

A description of how the program is appropriate for the hazards and quantities stored or used in the facility is required including:

- i. instruction in the safe operations involving HazMat (including storage);
- ii. completing and maintaining monitoring and inspection records;
- iii. instruction on emergency procedures for leaks, spills, fires or explosions;
- iv. shutdown of operations;
- v. personnel designated to perform specific tasks in emergency and nonemergency HazMat-related events such as emergency responder liaisons;
- vi. evacuation procedures including evacuation meeting point locations.

**D EAP**

The following is FPD's policy on developing an EAP. The documentation is normally contained in a package with an EAP development handbook. The package that may be acquired from the FPD Lieutenant responsible for evacuations and training (720) 913-3498. The following provides a good overview of the expectations and understanding of the intent.

# CITY AND COUNTY OF DENVER

DEPARTMENT OF SAFETY  
FIRE DEPARTMENT

WELLINGTON E. WEBB  
Mayor

FIRE PREVENTION & INVESTIGATION  
745 WEST COLFAX AVENUE  
DENVER, COLORADO 80204  
PHONE: (720) 913-3414  
FAX: (720) 913-3587  
[www.denvergov.org/dfd](http://www.denvergov.org/dfd)

March 10, 2003

**Dear Business Owner / Manager:**

**“Creating an Emergency Action Plan” was developed with input from Denver’s public and private sectors to ensure that building owners and managers have pertinent information that is applicable to a wide range of building types.**

**The first part of the “Creating an Emergency Action Plan” will require tailoring the plan to the individual building. The second part, starting at “Other Emergencies” can be applied with little change.**

**Once the ‘Plan’ has been customized to fit your building and is ready to be submitted for approval, please have all changes or additions to the document hi-lighted. Then submit the completed plan via E-mail.**

**As of March 10, 2003, all action plans must conform to the guidelines established by this “Creating an Emergency Action Plan” document. All action plans must be submitted to the Fire Prevention and Investigation Division for review and approval on an annual basis.**

**We are aware of the significant workload that you operate under; however, the potential exists for a serious problem in any building and we request your sincere consideration and cooperation in providing an updated action plan on an annual basis.**

**Sincerely,**

**Fred W. Jonke, Captain**  
**Fire Prevention and Investigation Division**  
**Denver Fire Department**



**DENVER FIRE DEPARTMENT**  
**CREATING AN**  
**EMERGENCY ACTION PLAN**

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**Appendix:**  
**SAMPLE EMERGENCY ACTION PLAN**

**Introduction**

The purpose of this guideline is to help building owners and managers enhance life safety, reduce injuries, minimize risk to property, and avoid confusion by pre-planning for possible emergencies.

High-profile emergency incidents such as those in New York City and Oklahoma City have heightened the general public’s awareness of the importance of emergency preparedness in the workplace. But quite apart from such dramatic incidents, business and industry suffer millions of dollars in fire loss each year. For example, in 1999 damage from fire in industrial properties was an estimated \$1.4 billion. Causes of fire in commercial and industrial environments vary. The two leading causes of fire in these environments are: 1) The failure of specialized equipment, or 2) arson. Regardless of the cause, the workplace must be prepared to deal with a fire emergency.

Fire is only one type of emergency that occurs in the workplace. Large and small companies alike may also experience explosions, medical emergencies, chemical spills, toxic releases, and a variety of other incidents. In protecting employees from fire and/or other types of emergencies, and in an effort to prevent property loss, businesses are using Emergency Action Plans.

The two essential components of an Emergency Preparedness Plan are:

1. **A Fire Prevention Plan**, which describes how to prevent a fire from occurring.
2. **An Emergency Action Plan**, which details what to do when a fire/emergency occurs. Most companies develop an in-depth document as well as a single-page summary. This summary document highlights the most important information, and is given to every occupant.

This guideline is designed to assist you, as a building owner or manager, in developing the above two documents as part of your business or building's comprehensive Emergency Preparedness Plan. In these pages you will find recommendations, technical expertise, and tips based on the Denver Fire Department's experience with hundreds of Denver businesses over the years. It also contains lessons learned from investigations of high-rise fires in other cities over many decades.

This guideline is meant to provide basic information for the most common conditions and situations. Any questions can be addressed to the Fire Prevention and Investigation Division between 7:30 a.m. and 4:00 p.m. at 720-913-3474.

## **Creating a FIRE PREVENTION PLAN**

Every business should have a Fire Prevention Plan. For organizations with *10 or fewer employees*, a written plan is not required. The employer can simply communicate the plan verbally to employees. For organizations with *10 or more employees*, a written plan is required. (This is required by several standards: The OSHA (Occupational Safety and Health Administration) Regulation for an Emergency Action Plan Standard: CFR 1910.38 Employee Emergency Plans and Fire Prevention Plans; National Fire Prevention Association Pamphlet 101, Life Safety Code; and Denver Fire Code.)

A written copy of the Fire Prevention Plan should be kept in the workplace, made available for employees to review, and be posted (on a bulletin board in a common area, etc.). Denver's Fire Code requires the employer to review with each employee the parts of the plan that are specific to that employee's ability to protect themselves in an emergency.

The Denver Fire Department Fire Prevention and Investigation Division is a resource that is available to assist business owners and managers with questions pertaining to: storage, handling and use of flammable or combustible materials, permitting for specific hazardous procedures, and advice on daily activities that may present a specific hazard.

A Fire Prevention Plan includes the following components:

- **List of Major Workplace Hazards.** Their proper handling and storage procedures, potential ignition sources (welding, smoking, electrical, etc.), and their control procedures (permits, etc.), and the type of fire protection equipment or systems that can control a fire involving them.

- **Personnel Responsible for Maintenance.** Include the names or regular job titles of personnel who are responsible for the maintenance of equipment and systems installed to prevent or control ignitions or fires.
- **Personnel Responsible for Fuel Source Hazards.** Include the names or regular job titles of personnel who are responsible for the control of fuel source hazards.
- **Housekeeping.** A Fire Prevention Plan requires employers to control the accumulations of flammable and combustible waste materials and residues so that they do not contribute to a fire emergency. For example, with the assistance of the Fire Department a company may establish a limit on how much of a specific flammable or combustible liquid may be stored on site. Housekeeping procedures are included in the written Fire Prevention Plan to specify the quantity limits that have been established for routine use of potential fuels, such as flammable/combustible liquids, and for waste or residual materials.
- **Training.** Employers must make employees aware of the fire hazards of the materials and processes with which they work.
- **Maintenance.** The employer must regularly and properly maintain the features and systems installed on heat-producing equipment to prevent the accidental ignition of combustible materials. These maintenance procedures must be included in the written Fire Prevention Plan.

## **CREATING AN EMERGENCY ACTION PLAN**

Article 13 of the Uniform Fire Code requires that certain occupancies develop Emergency Action Plans. *The Denver Fire Department requires the owners of all buildings that are required to have a fire alarm system, in accordance with Uniform Building Code, Section 907.2, Denver Amendments, to create an Emergency Action Plan and, upon request, to submit the plan to the Fire Department for approval.*

The Denver Fire Department strongly recommends that owners/managers of all buildings create a written Emergency Action Plan for the use of the building management, staff, tenants and employees to assist them in reacting quickly and appropriately to the unique problems created by an emergency.

An Emergency Action Plan is an all-encompassing, comprehensive document intended primarily for management’s use in preparation for an emergency situation. However, the basic safety response procedures defined in this document should be familiar to all building occupants and readily accessible in an easy-to-understand format, such as a one-page summary that will be distributed to all employees (see “Quick Action Document” on page 6 of this document).

In developing your Emergency Action Plan, be realistic in your assessment of the scope and probability of various emergencies and disasters, including the ability of the building’s systems and the people to perform as expected. Do not assume! Use facts, not suppositions. Expectations for an effective and appropriate reaction to emergencies are achievable only through comprehensive and honest planning.

The following paragraphs describe the basic components of an Emergency Action Plan, followed by a sample Emergency Action Plan that will be helpful to you in developing your own (customized for your specific building and circumstances). This guideline is meant to provide basic information for the most common conditions and situations. Any questions can be addressed to the Fire Prevention and Investigation Division between 7:30 a.m. and 4:00 p.m. at 720-913-3474.

## ***SITUATIONS TO BE ADDRESSED:***

An Emergency Action Plan must address, at a minimum, responses to the following emergency situations:

- **Accident or illness**
- **Fire**
- **Bomb threat**
- **Blackout / Power failure**
- **Tornado / Severe weather**
- **Earthquake**
- **Elevator malfunction**
- **Natural gas emergency**
- **Hazardous material leak / Flooded building / Environmental emergency**
- **“Stranger in the building” or “Threatening situation”**

## ***BASIC INFORMATION TO INCLUDE:***

The Plan must provide, at a minimum, the following information:

### ***1. Emergency contact information***

Provide phone numbers for Municipal Resources (e.g., Fire, Police, and Ambulance – **Dial 911**) as well as a Management Resource List and Engineering Resource List.

### ***2. Evacuation and relocation***

The plan should give clear instructions for occupant response during emergencies. As a general rule for high rise buildings, when a fire alarm signal sounds, the occupants of three floors — the floor on which the alarm occurs, and the adjacent floors above and below — must evacuate the building immediately.

For buildings more than six (6) levels above grade, a possible alternative is **relocation** to lower building levels. However, before being incorporated into the Emergency Action Plan for a specific building, this option must be approved by the Denver Fire Department. The DFD’s approval will be based on three criteria:

- a. The number of occupants who will be relocated to each building level.
- b. Whether or not an agreement has been reached between the tenants of each building level and building management to allow relocation to the various building levels. (Concern about this is prompted partly by safety issues and partly by reports of vandalism or theft in office buildings after people have been relocated to other floors during emergencies or emergency drills.)
- c. The level of protection provided by the fire and life safety systems present in the building.

Do not include expectations of helicopter rescue from the roof in your plan. Using helicopters for roof rescue is an extraordinarily dangerous procedure for the occupants, the pilots, and the firefighters who may be in or around the building (due to intense heat and smoke plumes above the building). Building designers incorporate numerous features that direct occupants to the street or grade level for evacuation purposes.

### 3. *Assigned tasks*

Clearly delineate specific instructions and responsibilities to be carried out. Use positions and or titles, not specific names. For example:

- Building and Tenant Management
- Building Engineer
- Building and Tenant Security
- Building and Tenant Telephone Operator
- Building and Tenant “Safety” Personnel, i.e.,
  - Safety Director
  - Floor Wardens

### 4. *Building survey*

The Emergency Action Plan should describe pertinent aspects of the building’s layout and safety systems. Remember, your plan must be customized for your specific building and/or your specific area of a building. Include the following:

- **Fire Protection Equipment and Systems: Type and Location**

Smoke/Heat Detection

Fire Sprinklers, Fire Pumps, Fire Standpipe Hose Connections

Fire Doors

Smoke Control – Type (e.g., pressurization, exhaust) and Location (e.g., stairwell, office space, occupant refuge area)

Emergency Generators – providing emergency electrical power to which systems

Emergency Lighting – Where? Are they energized by emergency generator or independent battery packs?

Elevator - Fire Recall

Fire Alarm Manual Pull Stations

Fire Command Center – What resources are available there?

Building Plans, Floor Plans, Schematics, etc. – Where? (For use in problem solving during an emergency)

Areas of Rescue Assistance (“Refuge Area”) – Where?

- **Communication Equipment and Systems.** Establishing and maintaining a communication link among all persons within the building and the people attempting to manage the emergency **is critical**. Inventory the type, operation, and location of communication equipment. Consider “back-up” and redundancy approaches to emergency communications (such as battery-powered radios to monitor newscasts, or cellular telephones). Provide telephone numbers to all building spaces in manager’s office and/or fire command center.

One NOAA (Emergency Weather) radio and one AM radio, both with battery back up and spare batteries, should be kept in the office.

- **Building Security – Ingress and Egress Control.** Performance of doors, locks, security personnel, etc., in an emergency. (Do not inadvertently trap people.)

5. *Assistance to individuals with impaired mobility.*

**Your Emergency Action Plan must include written procedures for assisting mobility-impaired individuals in the event of emergency. This includes:**

- **Location List.** Where possible identify individuals requiring rescue assistance and their locations. This information should be readily available to emergency responders. This document shall be kept accurate and updated, with a copy posted in the Fire Command Center.
- **Create a Formal “Buddy” System.** In your planning consider residents, workers, and visitors.

6. *Instructions for assisting visitors.*

The plan should recognize that it is the joint responsibility of all employees to render the necessary emergency assistance to members of the public who are visiting the building. Employees must ensure that any visitors are notified of the emergency and told to evacuate/relocate to safety using the nearest stairway/exit.

### ***DEVELOPING A “QUICK ACTION DOCUMENT”:***

Once you have addressed all emergencies in your Emergency Action Plan it is helpful to produce a “Quick Action Document” — such as a one-page bulleted list or an indexed, tabbed report with pages marked to identify the type of emergency. This document should show the highlights of each type of emergency and summarize everything a building occupant needs to know about safe emergency response, evacuation, and assistance to visitors, etc. This document should be distributed to every occupant so they can react quickly and appropriately to an emergency. Copies may also be posted on bulletin boards in common areas. An example is supplied at end of the sample ‘Emergency Action Plan’.

### ***EDUCATING EMPLOYEES ABOUT THE PLAN:***

The Plan and the function of these life safety systems, in relation to individual safety, shall be explained to all employees during the required annual Emergency Action Plan review/update, fire drills and training exercises.

The following is a handbook with some planning considerations on how to write an Emergency Action Plan and an example of an Emergency Action Plan. Your plan must be detailed and specific to your building, operation, and occupants.

**E FCP**

<<<Reserved: policy to be inserted when complete>>>

## **V. Appendices**

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## Appendix A Frequently Asked Questions

**1. Why must I complete this Hazardous Materials Report?**

Completion of the Hazardous Materials Report is a requirement of the 2009 International Fire Code, Section 2701.5.2.

**2. How will this information be used?**

It will be used by the Fire Department to evaluate the hazardous materials used at your facility and to issue your hazardous materials permit.

**3. Is it necessary for me to report each chemical in the facility?**

Yes. The exception is DO NOT report small amounts of consumer size and strength supplies such as: a container of furniture polish, window cleaners, etc. used for housekeeping and maintenance at your facility.

**4. Do I have to use the Excel workbooks provided?**

Yes. This format is required by the Denver Fire Department.

**5. How often must I complete a Hazardous Materials Report?**

Annually. An HMR is required every time you renew your hazardous materials permit. Also, an amended HMR is required within 30 days of any change to the amount of HazMat in the facility that creates a quantity that larger than 105% of what was reported on the previous HMR, or introduces a quantity of HazMat over the corresponding permit amount.

**6. Is the information I submit available to the public?**

Yes. By written request only.

**7. Is it important that I keep copies of the Hazardous Materials Report?**

Yes. It's required to be available should an emergency incident occur and upon request during an inspection. It will also assist in preparing the forms for the following year.

**8. Do I need to submit the Materials Safety Data Sheet (MSDS) with this application?**

Only if requested by the person reviewing the HMR for FPD.

**9. Does the completion of this form meet the requirements for SARA Title III reporting?**

Typically not, though there is some overlap. Please see <http://www.cdphe.state.co.us/oeis/sara/index.html> for information regarding the federal Superfund Amendments and Reauthorization Act (SARA) Title 3, aka "Emergency Planning and Right to Know Act of 1986".

## Appendix B Acronyms and Definitions

### Acronyms and Definitions

AHJ	authority having jurisdiction
CAS	Chemical Abstract Service number. See: <a href="http://www.cas.org/content/chemical-substances/faqs">http://www.cas.org/content/chemical-substances/faqs</a>
Code(s)	The IFC, IBC, and applicable NFPA standards. The term is meant to include all applicable regulatory documents; e.g., Denver revised Municipal Code.
Control Area, Indoor	Spaces within a building that are enclosed and bounded by exterior walls, fire walls, fire barriers and roofs, or a combinations thereof, where quantities of HazMat not exceeding the MAQs are stored, dispensed, used, produced, or handled.
Control Area, Outdoor	An outdoor area that contains HazMat in amounts not exceeding the MAQs (see IFC Tables 2703.1.1(3) and 2703.1.1(4))
DFD	Denver Fire Department
EAP	Emergency Action Plan (see Sections II.D and IV.D of these instructions)
Facility	Portions of the building occupied by the business and the adjacent outdoor areas on the same parcel of land used for HazMat
FCO	Fire Code Official
FCP	Facility Closure Plan (see Sections II.E and IV.E of these instructions)
FPD	Fire Prevention Division (of DFD)
FPE	Fire Protection Engineer or Fire Protection Engineering
Hazardous Occupancy	High-hazard occupancy groups including, among other things, the use of a building or structure, or a portion thereof, that involves the manufacturing, processing, generation, dispensing, or storage of materials that constitute a physical or health hazard, in quantities exceeding those allowed in control areas based on the MAQs.
HazMat	Hazardous Materials; the term is applicable to specific hazardous products regulated by the codes (e.g., liquefied petroleum gas, ammunition, batteries, etc.) along with hazardous physical or health properties of materials regulated by the codes (e.g., corrosive, flammable, etc.) and in both cases include use, handling, production, storage, dispensing, etc., operations
HazMat Area	General term used to include both Control Areas and Hazardous Occupancies
HMIS	Hazardous Materials Inventory Statement (see Sections II.B.1 and IV.B.5 of these instructions)

HMMP	Hazardous Materials Management Plan (see Sections II.C and IV.C of these instructions)
HMR	HazMat Report (see Sections II.B and IV.B of these instructions)
IBC	2009 International Building Code as amended by the 2011 Denver Building Code Amendments
IFC	2009 International Fire Code as amended by the 2011 Denver Fire Code Amendments
LC <sub>50</sub>	median lethal concentration in air when administered by continuous inhalation for 1 hour to albino rats weighing between 200 and 300 grams each
LD <sub>50</sub>	median lethal dose when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between 2 and 3 kilograms each
MAQ	Maximum Allowable Quantity per Control Area (note there are both Indoor and Outdoor Control Areas with different MAQs)
MS	Microsoft Corporation
MSDS	Material Safety Data Sheet(s)
Operational Permit	an official document or certificate issued by the AHJ which authorizes performance of a specified activity (see IFC Section 105.6)
OTC	Order to Comply. This is a document issued by FPD directing compliance with a facility or operation regulated in the codes.
Permit Amounts	the quantity limit at which an Operational Permit is required (see Appendix C)
ppm	parts per million
Summons	This is an order to appear in court based on a noncompliant facility or operation regulated in the codes. It is usually issued after compliance is not achieved under an OTC.
Workbook	MS Excel file containing multiple Worksheets.
Worksheet	One of several spreadsheets in a MS Excel Workbook.

## Appendix C Permit Amounts per Facility

### PHYSICAL HAZARD PERMIT LEVEL AMOUNTS

Material or Physical Hazard	Physical State (or Class) and Location <sup>b, c</sup>	Permit Amount <sup>a</sup>	Permit Code
Aerosols	Levels 1, 2, and 3	300 lbs	48
Ammunition	Small Arms	Any amount	13.2
	Large Arms	Any amount	13.3
Battery (gallons of electrolyte)	Industrial Truck	10 gal	64.2
	UPS	10 gal	64
Combustible Fiber	Loose	100 cu ft	8
	Baled	1,000 cu ft	8
Combustible Liquid	Class II, III-A Indoor	60 gal	15
	Class II, III-A Outdoor	120 gal	15
	Class III-B	1,000 gal	15
Explosive / Blasting Agent	1.1, 1.2, 1.3, 1.4, 1.4G, 1.5, 1.6	Any amount	13
Flammable	Compressed Gas (includes CNG but not LPG)	200 cu ft	10
	Liquefied Gas (includes CNG but not LPG)	37 lbs	10
	Class I-A , I-B, I-C Liquid Indoor	30 gal	15
	Class I-A , I-B, I-C Liquid Outdoor	60 gal	15
	Solid, Indoor	100 lbs	26
	Solid, Outdoor	100 lbs	26
Inert	Compressed Gas	6,000 cu ft	10
	Cryogenic Indoor	60 gal	11
	Cryogenic Outdoor	500 gal	11
	Liquefied	1,100 lbs	10

<b>Material or Physical Hazard</b>	<b>Physical State (or Class) and Location<sup>b, c</sup></b>	<b>Permit Amount<sup>a</sup></b>	<b>Permit Code</b>
Liquefied Petroleum Gas (LPG)		1 lb	31
Organic Peroxide	Unclassified, Detonable (UD) Liquid or Solid	Any amount	26
	Class 1 and 2 Liquid or Solid	Any amount	26
	Class 3 Liquid or Solid	10 lbs	26
	Class 4 Liquid or Solid	20 lbs	26
	Class 5 Liquid or Solid	not limited	n/a
Oxidizer (includes Oxygen)	Compressed Gas	504 cu ft	10
	Cryogenic Liquid Indoor	10 gal	11
	Cryogenic Liquid Outdoor	50 gal	11
	Liquefied Gas	50 gal	10
	Class 4 Liquid or Solid	Any amount	26
	Class 3 Liquid or Solid	10 lbs	26
	Class 2 Liquid or Solid	100 lbs	26
	Class 1 Liquid or Solid	550 lbs	26
Pyrophoric	Compressed or Liquefied Gas	Any amount	10
	Liquid or Solid	Any amount	26
Unstable Reactive	Compressed or Liquefied Gas	Any amount	10
	Class 3 and 4 Liquid or Solid	Any amount	26
	Class 2 Liquid or Solid	10 lbs	26
	Class 1 Liquid or Solid	100 lbs	26
Water Reactive	Class 3 Liquid or Solid	10 lbs	26
	Class 2 Liquid or Solid	50 lbs	26
	Class 1 Liquid or Solid	100 lbs	26

- a. a HazMat Operational Permit is required for facilities with aggregate quantities at or above these amounts
- b. if location (Indoor or Outdoor) is not identified, amounts listed apply to both
- c. a HazMat Operational Permit (11) is required for any amount of Cryogen Liquid not listed but posing a Physical Hazard

**HEALTH HAZARD PERMIT LEVEL AMOUNTS**

Health Hazard	Physical State (or Class) and Location <sup>b, c</sup>	Permit Amount <sup>a</sup>	Permit Code
Biohazard	Compressed or Liquefied Gas	Any amount	10
	Liquid or Solid	Any amount	26
Carcinogen	Compressed Gas	200 cu ft	10
	Liquefied Gas	37 lbs	10
	Liquid	1 gal	26
	Solid Indoor or Outdoor	10 lbs	26
Corrosive	Compressed Gas	200 cu ft	10
	Liquefied Gas	37 lbs	10
	Liquid	55 gal	26
	Solid	550 lbs	26
Highly Toxic	Compressed or Liquefied Gas	Any amount	10
	Liquid or Solid	Any amount	26
Irritant	Compressed Gas	200 cu ft	10
	Liquefied Gas	37 lbs	10
	Liquid	55 gal	26
	Solid	550 lbs	26
Other Health Hazard	Compressed Gas	650 cu ft	10
	Liquefied Gas	120 lbs	10
	Liquid	55 gal	26
	Solid	550 lbs	26
Radioactive	Compressed or Liquefied Gas	Any amount	10
	Liquid or Solid	Any amount	26

Health Hazard	Physical State (or Class) and Location <sup>b, c</sup>	Permit Amount <sup>a</sup>	Permit Code
Sensitizer	Compressed Gas	200 cu ft	10
	Liquefied Gas	37 lbs	10
	Liquid	55 gal	26
	Solid	550 lbs	26
Toxic	Compressed or Liquefied Gas	Any amount	10
	Liquid or Solid	Any amount	26

- a. a HazMat Operational Permit is required for facilities with aggregate quantities at or above these amounts
- b. if location (Indoor or Outdoor) is not identified, amounts listed apply to both
- c. a HazMat Operational Permit (11) is required for any amount of Cryogenic Liquid not listed but posing a Health Hazard

The following sections from the 2011 Denver Amendments to the IFC affect the Compressed Gases and Flammable/Combustible Liquids requirements in the table above:

**IFC Sections (as amended) referenced from Permit Amount tables above:**

**105.6.37 Compressed gases (not LPG).** A permit is required for the storage, use or handling at *normal temperature and pressure* (NTP) of *compressed gases* in quantities equal or greater than the amounts listed in Table 105.6.37.

**Exception:** Vehicles equipped for and using *compressed gas* as a fuel for propelling the vehicle.

**105.6.57 Flammable or combustible liquids.** A permit is required:

1. To use or operate a pipeline for the transportation within facilities of flammable or combustible liquids. This requirement shall not apply to the off-site transportation in pipelines regulated by the Department of Transportation (DOT) nor does it apply to piping systems.
2. To store, handle or use Class I liquids of 30 gallons (114 L) or more in a building or of 60 gallons (228.6 L) or more outside of a building, except that a permit is not required for the following:
  - 2.1. The storage or use of Class I liquids in the fuel tank of a motor vehicle, aircraft, motorboat, mobile power plant or mobile heating plant, unless such storage, in the opinion of the code official, would cause an unsafe condition.
  - 2.2. The storage or use of paints, oils, varnishes or similar flammable mixtures when such liquids are stored for maintenance, painting or similar purposes for a period of not more than 30 days.
3. To store, handle or use Class II or IIIA liquids of 60 gallons (228.6 L) or more in a building or of 120 gallons (457.1 L) or more outside a building, except for fuel oil used in connection with oil-burning equipment.
  - 3.1 To store, handle or use Class IIIB liquids of 1,000 gallons or more in a building or outside a building.

4. To remove Class I or Class II liquids from an underground storage tank used for fueling motor vehicles by any means other than the approved, stationary on-site pumps normally used for dispensing purposes.
5. To operate tank vehicles, equipment, tanks, plants, terminals, wells, fuel-dispensing stations, refineries, distilleries and similar facilities where flammable and combustible liquids are produced, processed, transported, stored, dispensed or used.
6. To place temporarily out of service (for more than 90 days) an underground, protected above-ground or above-ground flammable or combustible liquid tank.
7. To change the type of contents stored in a flammable or combustible liquid tank to a material which poses a greater hazard than that for which the tank was designed and constructed.
8. To manufacture, process, blend or refine flammable or combustible liquids.
9. To engage in the dispensing of liquid fuels into the fuel tanks of motor vehicles at commercial, industrial, governmental or manufacturing establishments.
10. To utilize a site for the dispensing of liquid fuels from tank vehicles into the fuel tanks of motor vehicles at commercial, industrial, governmental or manufacturing establishments.
11. A site plan shall be submitted showing the following: distances from all buildings, property lines, utility poles, power lines, railroad tracks, etc. A Hazardous Materials Inventory Statement (HMIS) may be required upon request.

### **Department of Safety – Fire Permit Fees**

<b>ACTIVITY / OPERATION / PRACTICE / FUNCTION</b>	<b>PERMIT FEE</b>
Aerosol Products – store or handle more than 300 lbs.	see table below
Ammunition – Large arms	\$75
Ammunition – Small arms	\$75
Battery Charging - on or off vehicle	see table below
Battery System – having an electrolyte capacity in excess of 10 gallons	see table below
Blank Cartridges – to sell, store and use	\$50
Cellulose Nitrate – store, handle, use display	Flammable solid
Cellulose Nitrate Film – store, handle, use, display	Flammable solid
Chemical Tanks / Cryogenic Towers – install / modify	\$125
Chemical Tanks / Cryogenic Towers – remove / abandon	\$125
Combustible Fiber – store / handle	see table below
Compressed Gas (not LPG) – store, handle, use	see tables below

<b>ACTIVITY / OPERATION / PRACTICE / FUNCTION</b>	<b>PERMIT FEE</b>
Compressed Natural Gas (CNG) – install, modify, remove, store	see tables below
Cryogen – store, use, handle	see tables below
Explosive / Blasting Agents	see tables below
Fireworks / Pyrotechnics	see tables below
Flammable or Combustible Liquids – store, use, handle	see tables below
Generator - Emergency / Fire Pump – Diesel Fuel Tank System (per tank) (integral day tank, remote day tank and main tank)	\$125
Generator – Optional Standby / Natural Gas or Diesel	\$125
Hazardous Materials – store, use, handle	see tables below
Hazardous Materials Inventory Statement Plan Review - Small	\$50
Hazardous Materials Inventory Statement Plan Review – Large	\$100
Hazardous Production Materials (for Haz Mat fees, see Table)	\$125
Hazardous Waste Generator (no exceptions)	Used oil only \$75 ≤ 100 lbs/yr \$125 >101 lbs, ≤ 5 tons/yr \$250 > 5 tons \$375
Hazardous Waste Generator Contingency Plan Review	\$75
Hypergolic Materials – any amount	see tables below
Industrial Trucks – each – per NFPA Pamphlet 505	\$75
Laboratories – to store and use hazardous and flammable substances	see tables below
Limited Fueling and other fuel transport operations (per vehicle)	\$75
Liquefied Chlorine – to store, use, sell and transport	see tables below
LPG – annual filling or exchange (amount of gas calculated/assessed separately)	\$75 per tank or cage
LPG – install, modify, remove any container or system / storage quantities	\$125
LPG – operate / maintain any container or system / storage quantities	see tables below
LPG – limited operations / construction sites	see tables below
LPG – roofing operation	\$75/\$425
LPG – operation of cargo tankers that transport LP-Gas	\$75 per tanker
Liquid or Gas-fueled Vehicles or Equipment in Assembly Buildings (per vehicle)	\$75
Magnesium – store, use, handle	see tables below

<b>ACTIVITY / OPERATION / PRACTICE / FUNCTION</b>	<b>PERMIT FEE</b>
Matches – bulk storage	\$125
Medical Gas Systems (per system)	see tables below
Nitrous Oxide-piped Systems	\$50
Organic Coating – manufacture of more than one gallon per day	see tables below
Ozone generator – per system	\$125
Plan Review – Development plan review (assessed in ½ hour increments)	\$100 per hour
Plan Review – Pre-plan submittal consultation (assessed in ½ hour increments)	\$100 per hour
Plan Review – Hazardous Materials	\$100 per hour
Plan Review – Expedited plan reviews (assessed in ½ hour increments)	\$100 per hour
Plan Review – Subsequent plan submittals (third and subsequent submittals)	\$200
Plastic Foam Products (flammable) – storage over 1,000 pounds	\$50
Powder Coating – see Spray Booth, Spraying and Dipping	\$75
Pyrophoric Materials – any amount	see tables below
Radioactive Material – store, use, handle	see tables below
Special Conditional Permit (for special conditions, such as temporary hazardous conditions, vacated areas, abandoned tanks, etc.)	\$575
Special Events – Places of Assembly – Store, use, handle compressed gases at temporary event	see tables below
Special Events – Places of Assembly – Store, use, handle flammable or combustible liquids at temporary event	see tables below
Special Event (outdoor) with six (6) or more fuel-fired cooking/heating units	see tables below
Special Spray Application Projects—Interior of Structure—Flammable or Combustible Finishes	\$75/\$425
Spray Booth / Powder Coating – installation, including fire protection system	\$75
Spraying – One time / one location	\$75
Spraying – At various locations – Annual	\$425
Spraying and Dipping / Powder Coating (per booth)	\$75
Storage Tank, Flammable/Combustible – Dispensing System – install, repair, alter, upgrade (per tank)	\$100
Storage Tank, Flammable/Combustible – remove/abandon in place (annual fee per tank)	\$125

ACTIVITY / OPERATION / PRACTICE / FUNCTION	PERMIT FEE
Stored Electrical Energy Emergency / Standby Power Systems (non- battery systems)	\$75
Sulphur / Sulphur Chloride – to store, sell or use	see tables below
Tanks, Change of Contents	\$125
Tents with Heat and / or Cooking	Additional \$50
Underground Hazardous Material Storage Tanks	\$125
Varnishes	see tables below

- Material hazards and specific regulated materials and operations above are selected from the complete permit fee table; for complete table, see <http://www.denvergov.org/tabid/437034/default.aspx>
- All fees are payable annually unless otherwise noted.

## Appendix D NFPA 704

NFPA 704 provides a simple system of readily recognizable and easily understood markings that provide at a glance a general idea of the chemical hazards of the materials they represent to short term, acute exposure under fire conditions, spills, or similar emergencies.

Visible hazard identification signs (placards) as specified in NFPA 704 are required under the IFC in all occupancies where HazMat is present in quantities exceeding the Permit Amounts (see Section III.A and Appendix C in these instructions). The placard for each building or HazMat area represents the composite hazard rating for all materials in that building or area.

The system of markings identifies the hazards of the associated material(s) in terms of 3 principal categories – Health, Flammability, and Instability – and indicates the degree of severity by numerical ratings ranging from zero (no hazard) to four (severe). The information is presented in a spatial arrangement of colored diamonds with Health in a blue diamond at the nine o'clock position, Flammability in a red diamond at 12:00, and Instability in a yellow diamond at 3:00. The fourth quadrant at the 6:00 position is a white (colorless) diamond reserved for indicating special hazards.

Per NFPA 704, all signs must be durable and have contrasting numbers and symbols. Exterior signs shall be weather-resistant and measure a minimum of 15" by 15". Interior signs must be a minimum of 10" by 10". In situations where a wide variety of materials having varying degrees of hazards are stored, the identifying numerical values and symbols shall indicate the most severe degree of hazard in each category. These placards are available from companies listed in the phone book under "Fire Protection".

A minimum of two exterior placards are required in separate permanent, stationary locations (no doors if often propped open). Exterior placards are required to be durable, weather-resistant, and easily visible to anyone utilizing the access to the building or exterior HazMat area. Exterior placards shall be mounted:

- on the front of the building easily visible from the street
- at the secondary access (usually also the second exit)

Additional exterior placards are required:

- at all exterior access points to all buildings housing HazMat
- at all vehicle access points in fences between the street and any exterior placard required above

Interior placarding shall be of durable construction and permanently mounted as follows:

- above doorways to rooms where HazMat is located
- on the wall above and behind the HazMat in open areas
- at both ends of aisles serving racks where HazMat is stored

## HEALTH [BLUE]

Health hazard ratings identify the capability of a material to cause personal injury due to contact with or entry into the body via inhalation, skin contact, eye contact, or ingestion. Physical injury caused by the heat of fire or force from an explosion is not considered here.

The health hazard information section of the Material Safety Data Sheet(s) should provide the information necessary to determine the health rating (0-4) which best reflects the material.

RATING	DESCRIPTION	HAZARD CATEGORY
<b>4</b>	<p>Materials, including those too dangerous to be approached without specialized protective equipment, which on very short exposure could cause death or major residual injury, even if prompt medical attention is received.</p> <p>Materials that can, under emergency conditions, be lethal including (not limited to):</p> <ul style="list-style-type: none"> <li>gases with LC<sub>50</sub> for acute inhalation toxicity ≤ 1,000 ppm</li> <li>any liquid with a saturated vapor concentration at 68 °F ≥ 10x its LC<sub>50</sub> for acute inhalation toxicity, provided its LC<sub>50</sub> ≤ 1,000 ppm</li> <li>dusts and mists with LC<sub>50</sub> for acute inhalation toxicity ≤ 0.5 mg/L</li> <li>materials with LD<sub>50</sub> for acute dermal toxicity ≤ 40 mg/kg</li> <li>materials with LD<sub>50</sub> for acute oral toxicity ≤ 5 mg/kg</li> </ul>	Carcinogen Highly Toxic Radioactive
<b>3</b>	<p>Materials, including those requiring protection from all bodily contact, which after short exposure could cause serious temporary or residual injury, even after prompt medical care is received.</p>	Carcinogen Corrosive Cryogenic Flammable Cryogenic Oxidizing Other Health Hazards Toxic
<b>2</b>	<p>Materials, including those requiring the use of respiratory protective equipment with an independent air supply which after either intense or short exposure could cause temporary incapacitation or possible residual injury unless prompt care is obtained.</p>	Carcinogen Irritant Other Health Hazards
<b>1</b>	<p>Materials, including those requiring air-purifying respirators, which on short exposure could cause irritation but only minor residual injury if no care, is obtained.</p>	Carcinogen Sensitizer Other Health Hazards
<b>0</b>	<p>Materials that on short exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials.</p>	

**FLAMMABILITY [RED]**

The **FIRE AND EXPLOSION HAZARD DATA** section of the MSDS should provide the information necessary to determine the flammability rating (0-4) which best reflects the material. Report the NFPA 704 Rating and all corresponding Hazard Categories catalogued on the HMIS worksheet.

RATING	DESCRIPTION	HAZARD CATEGORY
<b>4</b>	Materials having flash points below 73 F and a boiling point less than 100 F. This would include materials that ignite spontaneously when exposed to air; also included are flammable gases and flammable cryogenic materials and Class I-A flammable liquids.	Combustible Dust Cryogenic Flammable Flammable Gas (gaseous or liquefied) Flammable Liquid I-A Organic Peroxide I Pyrophoric Gas
<b>3</b>	Materials having flash points below 73 F and having a boiling point at or above 100 F and those liquids having a flash point at or above 73 F and below 100 F. This would include Class I-B and Class I-C flammable liquids.	Combustible Fiber Flammable Liquid I-B Flammable Liquid I-C Organic Peroxide II Pyrophoric Solid or Liquid
<b>2</b>	Materials having flash points between 100 F and 200 F. This would include Class II and III-A combustible liquids.	Combustible Liquid II Combustible Liquid IIIA Flammable Solid Organic Peroxide III
<b>1</b>	Materials having flash points above 200 F. This includes Class III-B combustible liquids.	Combustible Liquid III-B Organic Peroxide IV
<b>0</b>	Materials that will not burn.	

**INSTABILITY [Yellow]**

The **INSTABILITY DATA** section of the MSDS should provide the information necessary to determine the rating (0-4) which best meets the material. Report the NFPA 704 Rating and all corresponding Hazard Categories catalogued on the HMIS worksheet.

RATING	DESCRIPTION	HAZARD CATEGORY
<b>4</b>	Materials that are readily able to detonate, or are of explosive decomposition or reactive at normal temperatures and pressures.	Explosives Organic Peroxide Unclassified, detonable Unstable Reactive Class 4 Unstable Reactive Class 3D
<b>3</b>	Materials capable of detonation or explosive decomposition or explosive reaction but require a strong initiating source or that must be heated under confinement.	Organic Peroxide I Organic Peroxide II Unstable Reactive Class 3N Water Reactive Class 3
<b>2</b>	Materials that readily undergo violent chemical change at elevated temperatures or pressures; this includes materials that may react violently with water or form potentially explosive mixtures with water.	Organic Peroxide III Unstable Reactive Class 2 Water Reactive Class 2
<b>1</b>	Materials that in themselves are normally stable but can become unstable at elevated temperatures and pressures; this includes materials that change or decompose on exposure to air, light, or moisture.	Organic Peroxide IV Unstable Reactive Class 1 Water Reactive Class 1
<b>0</b>	Materials that in themselves are normally stable even under fire conditions; this includes materials that do not react with water.	

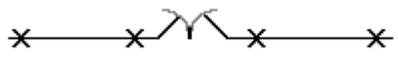
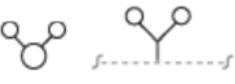
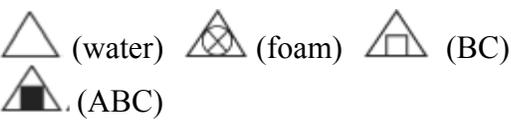
**SPECIAL HAZARD [WHITE]**

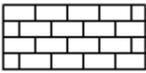
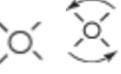
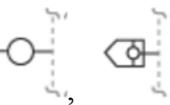
The **HEALTH, FIRE AND EXPLOSION, INSTABILITY, and REACTIVITY DATA** sections of the MSDS should provide the information necessary to determine the special hazard rating which best reflects the material. Report the NFPA 704 Rating and all corresponding Hazard Categories catalogued on the HMIS worksheet.

RATING	DESCRIPTION	HAZARD CATEGORY
<b>W</b>	Water Reactive. Materials that react with water.	Water Reactive Class 3, 2, or 1
<b>Ox</b>	Oxidizer. Materials with oxidizing properties.	Cryogenic Oxidizing Compressed Gas Oxidizing Liquefied Gas Oxidizing Oxidizer Class 4, 3, 2, or 1
<b>Ox--W</b>	Water Reactive Oxizers	Possesses properties of both
<b>SA</b>	Simple Asphyxiant	Limited in NFPA 704 to nitrogen, helium, neon, argon, krypton, and xenon

## Appendix E Graphic Symbols

	Access, Attic
	Access, Roof
	Berms and Dikes
	Compressed Gas Cylinders
	Compressed Gas Cabinet
	Cryogenic Dewar
	Detector, Gas
	Detector, Heat
	Detector, Smoke
	Drain, Storm
	Drain, Floor
 (combustible shaft)  (noncombustible shaft)	Elevator
	Emergency Control Station
	Emergency Info., Business Plan, Chemical Inventory, Maps
	Emergency Shut Down
	Evacuation Staging Area

	Evacuation Route
	Fan, Roof
	Fan, Wall
	Fence with Gate
	Fire Alarm Control Panel
	Fire Alarm Reset
	Fire Department Connection
	Fire Department Key Box
	Fire Extinguisher
	Fire Pump
	Guard Station
	Hazardous Materials Drums
	Hazardous Materials Storage cabinet
	Hose Connection
	Inside Hazardous Materials Handling
	Inside Hazardous Materials Storage
	Inside Hazardous Waste Storage

	Masonry Block Wall
<b>MSDS</b>	Material Data Safety Sheets (MSDS)
	Notification Appliance, Audible
	Notification Appliance, Audible and Visual
	Notification Appliance, Visual
<b>OHMH</b>	Outside Hazardous Materials Handling
<b>OHMS</b>	Outside Hazardous Materials Storage
<b>OHWS</b>	Outside Hazardous Waste Storage
	Power Lines
<b>PIV</b>	Post Indicator Valve
	Public Fire Hydrant
	Private Fire Hydrant
	Railroad Tracks
	Shutoff, Domestic Water
	Shutoff, Electrical
	Shutoff, HVAC
	Shutoff, Natural Gas

<b>SPILL</b>	Spill Control
	Sprinkler Risers
 (open)  (rated enclosure)	Stairway (arrow pointing low to high)
<u>-3rd St.-</u>	Streets (denote name) and Alleys
	Tank, Above-ground Vertical
	Tank, Underground
	Tank, Above-ground Horizontal
	Tank, Underground Vault
	Tank, Insulated
	Tank, Pressurized
	Tank, Water
<b>TRASH</b>	Trash / Refuse
	Valve, OS&Y

## Appendix F Common Materials Provided on the HMIS Worksheet

Common Materials	CAS#	State	Units	Aerosol	Ammunition	Combustible Fiber	Combustible Liquid	Explosive/Blasting Agent	Flammable	Inert Gas	Liquefied Petro Gas (LPG)	Organic Peroxide	Oxidizer	Pyrophoric	Unstable (Reactive)	Water Reactive	BioHazard	Carcinogen	Corrosive	Highly Toxic	Irritant	Other Health Hazard	Radioactive	Sensitizer	Toxic	Health (Blue)	Flammability (Red)	Instability Hazard (Yellow)	Special Hazard (White)
acetic acid/ ethyl ester	141-78-6	Liquid	gal						1B												X					2	3	0	
Acetic Acid/36%	64-19-7	Liquid	gal				0													X						3	0	0	
Acetic Acid/99%	64-19-7	Liquid	gal				2													X						2	2	0	
Acetic Acid/less than5%	64-19-7	Liquid	gal																	X	X					2	0	0	
Acetone	67-64-1	Liquid	gal						1B												X					2	3	0	
Acetylene	74-86-2	CompGas	cu ft						X						X											0	4	2	
Ammonia 35-50%	7664-41-7	CompGas	cu ft																		X					2	0	0	
Ammonia, Anhydrous	7664-41-7	Liquefied Gas	lbs						X							1				X						3	4	0	W
Anti-freeze (propylene glycol)	57-55-6	Liquid	gal				3B														X	X				3	1	0	
Argon Gas	7440-37-1	CompGas	cu ft							X																0	0	0	SA

Common Materials	CAS#	State	Units	Aerosol	Ammunition	Combustible Fiber	Combustible Liquid	Explosive/Blasting Agent	Flammable	Inert Gas	Liquefied Petro Gas (LPG)	Organic Peroxide	Oxidizer	Pyrophoric	Unstable (Reactive)	Water Reactive	BioHazard	Carcinogen	Corrosive	Highly Toxic	Irritant	Other Health Hazard	Radioactive	Sensitizer	Toxic	Health (Blue)	Flammability (Red)	Instability Hazard (Yellow)	Special Hazard (White)
Battery, Industrial Truck (H <sub>2</sub> SO <sub>4</sub> 12.7-50%)	7664-93-9	Liquid	gal													1			X					X	3	0	1	⚠	
Battery, UPS (H <sub>2</sub> SO <sub>4</sub> 12.7-50%)	7664-93-9	Liquid	gal													1			X					X	3	0	1	⚠	
Benzyl Alcohol	100-51-6	Liquid	gal				3B														X	X	X		2	1	0		
Bleach/Sodium Hypochlorite <15%	7681-52-9	Liquid	gal																		X					2	0	0	
Butane	106-97-8	Liquefied Gas	lbs								X															0	4	0	
Butylene	106-98-9	Liquefied Gas	lbs								X															0	4	0	
Caprylic Acid	124-07-2	Liquid	gal				3B														X					2	1	0	
Caprylic Acid/Sodium Salt	1984-06-1	Solid	lbs																							0	0	0	
Carbon Black	1333-86-4	Solid	lbs															X								0	4	0	
Carbon Dioxide, CO <sub>2</sub>	124-3-9	CompGas	cu ft							X																0	0	0	SA

Common Materials	CAS#	State	Units	Aerosol	Ammunition	Combustible Fiber	Combustible Liquid	Explosive/Blasting Agent	Flammable	Inert Gas	Liquefied Petro Gas (LPG)	Organic Peroxide	Oxidizer	Pyrophoric	Unstable (Reactive)	Water Reactive	BioHazard	Carcinogen	Corrosive	Highly Toxic	Irritant	Other Health Hazard	Radioactive	Sensitizer	Toxic	Health (Blue)	Flammability (Red)	Instability Hazard (Yellow)	Special Hazard (White)
Carbon Monoxide, CO	630-08-0	CompGas	cu ft						X													X				2	4	0	
Chlorine	7782-50-5	CompGas	cu ft										X						X					X		3	0	0	OX
Compressed Natural Gas (Methane)	74-82-8	CompGas	cu ft						X	X																3	4	0	
Danish Oil	64742-95-6	Liquid	gal				2															X				2	2	0	
Diesel Fuel		Liquid	gal				2															X				2	2	0	
Dipropylene Methyl Ether	34590-94-8	Liquid	gal				3A															X		X		2	2	0	
EBR Solvent	108-65-6	Liquid	gal				2															X				2	2	0	
Ethyl Acetone	141-78-6	Liquid	gal						1B													X				2	3	0	
Ethanol; Ethyl Alcohol, 96%-100%	64-17-5	Liquid	gal						1B													X	X			3	3	0	
Ethyl Alcohol, 50%-96% ABV w/Water	64-17-5	Liquid	gal						1B													X				2	3	0	
Ethyl Alcohol, 20%-40% ABV w/Water	64-17-5	Liquid	gal						1C																	1	3	0	

Common Materials	CAS#	State	Units	Aerosol	Ammunition	Combustible Fiber	Combustible Liquid	Explosive/Blasting Agent	Flammable	Inert Gas	Liquefied Petro Gas (LPG)	Organic Peroxide	Oxidizer	Pyrophoric	Unstable (Reactive)	Water Reactive	BioHazard	Carcinogen	Corrosive	Highly Toxic	Irritant	Other Health Hazard	Radioactive	Sensitizer	Toxic	Health (Blue)	Flammability (Red)	Instability Hazard (Yellow)	Special Hazard (White)
Ethyl Alcohol, 10% ABV w/Water	64-17-5	Liquid	gal				2																			1	2	0	
Ethyl Alcohol, 5% ABV w/Water	64-17-5	Liquid	gal				3A																			1	2	0	
Ethyl Benzene	100-41-4	Liquid	gal						1B									X			X					2	3	0	
Ethyl Methyl Ketone	78-93-3	Liquid	gal						1B												X					2	3	0	
Ethylene Glycol	107-21-1	Liquid	gal				3B														X	X				3	1	0	
Ethylene Glycol Monobutyl Ether	111-76-2	Liquid	gal				3A														X	X		X		3	2	0	
Gasoline	8006-61-9	Liquid	gal						1B									X			X					4	3	0	
Heptane	142-82-5	Liquid	gal						1B												X					2	3	0	

Common Materials	CAS#	State	Units	Aerosol	Ammunition	Combustible Fiber	Combustible Liquid	Explosive/Blasting Agent	Flammable	Inert Gas	Liquefied Petro Gas (LPG)	Organic Peroxide	Oxidizer	Pyrophoric	Unstable (Reactive)	Water Reactive	BioHazard	Carcinogen	Corrosive	Highly Toxic	Irritant	Other Health Hazard	Radioactive	Sensitizer	Toxic	Health (Blue)	Flammability (Red)	Instability Hazard (Yellow)	Special Hazard (White)
Hydrochloric Acid <15%	7647-01-0	Liquid	gal																		X					2	0	0	
Hydrochloric Acid 15-37%	7647-01-0	Liquid	gal																X							3	0	0	
Hydrogen	1333-74-0	CompGas	cu ft						X	X																0	4	0	SA
Hydrogen Chloride	7647-01-0	CompGas	cu ft																X							3	0	0	
Hydrogen Peroxide 30-35%	7722-84-1	Liquid	gal										2		0				X							3	0	0	Ox
Hydrogen Peroxide 3-10%	7722-84-1	Liquid	gal										1								X					2	0	0	Ox

Common Materials	CAS#	State	Units	Aerosol	Ammunition	Combustible Fiber	Combustible Liquid	Explosive/Blasting Agent	Flammable	Inert Gas	Liquefied Petro Gas (LPG)	Organic Peroxide	Oxidizer	Pyrophoric	Unstable (Reactive)	Water Reactive	BioHazard	Carcinogen	Corrosive	Highly Toxic	Irritant	Other Health Hazard	Radioactive	Sensitizer	Toxic	Health (Blue)	Flammability (Red)	Instability Hazard (Yellow)	Special Hazard (White)
Hydrogen Peroxide 50%	7722-84-1	Liquid	gal										2		1				X							3	0	1	Ox
Hydrogen Peroxide 70%	7722-84-1	Liquid	gal										3		3				X							3	0	3	Ox
Hydrotreated Lite Oil	64742-47-8	Liquid	gal				3A														X	X				3	2	0	
Iodine	7553-56-2	Solid	lbs										2						X							3	0	0	Ox
Iodine Lugols	7553-56-2	Liquid	gal																		X					2	0	0	
Isobutane	75-28-5	Liquefied Gas	lbs								X										X					3	4	0	
Isopropyl Alcohol 25%	67-63-0	Liquid	gal				3A														X					2	2	0	
Isopropyl Alcohol 50%	67-63-0	Liquid	gal				2														X					2	2	0	
Isopropyl Alcohol 70-80%	67-63-0	Liquid	gal						1C												X					2	3	0	

Common Materials	CAS#	State	Units	Aerosol	Ammunition	Combustible Fiber	Combustible Liquid	Explosive/Blasting Agent	Flammable	Inert Gas	Liquefied Petro Gas (LPG)	Organic Peroxide	Oxidizer	Pyrophoric	Unstable (Reactive)	Water Reactive	BioHazard	Carcinogen	Corrosive	Highly Toxic	Irritant	Other Health Hazard	Radioactive	Sensitizer	Toxic	Health (Blue)	Flammability (Red)	Instability Hazard (Yellow)	Special Hazard (White)
Isopropyl Alcohol 90%	67-63-0	Liquid	gal						1B												X					2	3	0	
Isopropyl Alcohol 100%	67-63-0	Liquid	gal						1B												X					2	3	0	
Kerosene	8008-20-6	Liquid	gal				2														X					2	2	0	
Linseed Oil	8001-26-1	Liquid	gal				3B																			0	1	0	
Magnesium	7439-95-4	Solid	lbs						X					2	1											0	2	2	⚠
Methanol (20% to 100%)	67-56-1	Liquid	gal						1B												X					2	3	0	
Methyl (wood) Alcohol 100%	67-56-1	Liquid	gal						1B												X					2	3	0	
Methyl Ethyl Ketone	78-93-3	Liquid	gal						1B												X					2	3	0	
Methyl Isobutyl Ketone	108-10-1	Liquid	gal				1B														X					2	3	0	
Methylpyrrolidone	872-50-4	Liquid	gal				3A														X					2	2	0	

Common Materials	CAS#	State	Units	Aerosol	Ammunition	Combustible Fiber	Combustible Liquid	Explosive/Blasting Agent	Flammable	Inert Gas	Liquefied Petro Gas (LPG)	Organic Peroxide	Oxidizer	Pyrophoric	Unstable (Reactive)	Water Reactive	BioHazard	Carcinogen	Corrosive	Highly Toxic	Irritant	Other Health Hazard	Radioactive	Sensitizer	Toxic	Health (Blue)	Flammability (Red)	Instability Hazard (Yellow)	Special Hazard (White)
Mineral Spirits	64742-88-7	Liquid	gal				2														X	X				3	2	0	
Motor Oil		Liquid	gal				3B														X					2	1	0	
Muriatic Acid/Hydrochloric Acid<15%	7647-01-0	Liquid	gal																		X					2	0	0	
Muriatic Acid/Hydrochloric Acid>15%	7647-01-0	Liquid	gal																X							3	0	0	
Naphtha/Hexane	64742-89-8	Liquid	gal						1B								X				X	X		X		3	2	0	
Nitric Acid-Ammonium salt	6484-52-2	Solid	lbs										3		3						X					2	0	4	Ox
Nitric Acid-aqueous 1-6%	7697-37-2	Liquid	gal																		X					2	0	0	
Nitric Acid-aqueous 50-71%	7697-37-2	Liquid	gal										2						X							3	0	0	Ox
Nitric Acid-aqueous 7-40%	7697-37-2	Liquid	gal										1						X							3	0	0	Ox
Nitric Acid-aqueous/fuming >86%	7697-37-2	Liquid	gal										3			1			X	X						4	0	0	Ox
Nitrogen, Gaseous	7727-37-9	CompGas	cu ft							X																0	0	0	SA

Common Materials	CAS#	State	Units	Aerosol	Ammunition	Combustible Fiber	Combustible Liquid	Explosive/Blasting Agent	Flammable	Inert Gas	Liquefied Petro Gas (LPG)	Organic Peroxide	Oxidizer	Pyrophoric	Unstable (Reactive)	Water Reactive	BioHazard	Carcinogen	Corrosive	Highly Toxic	Irritant	Other Health Hazard	Radioactive	Sensitizer	Toxic	Health (Blue)	Flammability (Red)	Instability Hazard (Yellow)	Special Hazard (White)
Nitrogen, Liquefied	7727-37-10	Cryogenic	gal							X																3	0	0	
Oxygen, Gaseous	7782-44-7	CompGas	cu ft										X													0	0	0	OX
Oxygen, Liquefied	7782-44-7	Cryogenic	gal										X													3	0	0	OX
Painters Naphtha	8032-32-4	Liquid	gal						1A												X					2	4	0	
Phosphoric Acid<80%	7664-38-2	Liquid	gal																							2	0	0	
Phosphoric Acid>80%	7664-38-2	Liquid	gal																X							3	0	0	
Potassium Hydroxide (solid)	1310-58-3	Solid	lbs													1			X					X		3	0	0	W
Potassium Hydroxide 45%	1310-58-3	Liquid	gal													1			X							3	0	0	W
Potassium Hydroxide 5.8%	1310-58-3	Liquid	gal																X			X				3	0	0	
Potassium Nitrate	7757-79-1	Solid	lbs										1								X					2	0	0	Ox
Potassium Nitrite	7758-09-0	Solid	lbs										1			1					X			X		3	0	1	Ox

Common Materials	CAS#	State	Units	Aerosol	Ammunition	Combustible Fiber	Combustible Liquid	Explosive/Blasting Agent	Flammable	Inert Gas	Liquefied Petro Gas (LPG)	Organic Peroxide	Oxidizer	Pyrophoric	Unstable (Reactive)	Water Reactive	BioHazard	Carcinogen	Corrosive	Highly Toxic	Irritant	Other Health Hazard	Radioactive	Sensitizer	Toxic	Health (Blue)	Flammability (Red)	Instability Hazard (Yellow)	Special Hazard (White)
Potassium Pyrophosphate	7320-34-5	Solid	lbs																		X					2	0	0	
Propane	74-98-6	Liquefied Gas	lbs							X	X															0	4	0	
Propylene	115-07-1	Liquefied Gas	lbs							X	X				1											0	4	1	
R-134a (1,1,1,2-tetrafluoroethane)	811-97-2	Liquefied Gas	lbs																			X				2	0	0	
R-22 (Chlorodifluoromethane)	75-45-6	Liquefied Gas	lbs																			X				2	0	0	
Rustoleum Protective Enamel	68476-86-8	CompGas	lbs	3																	X					2	4	0	
Sodium Bisulfate	7681-38-1	Solid	lbs																							3	0	0	
Sodium Bisulfate Monohydrate	10034-88-5	Solid	lbs																							3	0	0	
Sodium Hypochlorite>15%	7681-52-9	Liquid	gal																		X					3	0	0	
Sodium Nitrate	7631-99-4	Solid	lbs										1									X				2	0	0	Ox

Common Materials	CAS#	State	Units	Aerosol	Ammunition	Combustible Fiber	Combustible Liquid	Explosive/Blasting Agent	Flammable	Inert Gas	Liquefied Petro Gas (LPG)	Organic Peroxide	Oxidizer	Pyrophoric	Unstable (Reactive)	Water Reactive	BioHazard	Carcinogen	Corrosive	Highly Toxic	Irritant	Other Health Hazard	Radioactive	Sensitizer	Toxic	Health (Blue)	Flammability (Red)	Instability Hazard (Yellow)	Special Hazard (White)
Sodium Nitrite	7632-00-0	Solid	lbs										1						X					X	3	0	0	Ox	
Sodium Silicate (liquid)	1344-09-8	Liquid	gal																		X					2	0	0	
Sodium Silicate Anhydrous	6834-92-0	Solid	lbs																X							3	0	0	
Stoddard Solvent	8052-41-3	Liquid	gal				2														X					2	2	0	
Styrene	100-42-5	Liquid	gal						1C						2			X			X					2	3	2	
Titanium Dioxide	13463-67-7	Solid	lbs															X								0	0	0	
Toluene	108-88-3	Liquid	gal						1B												X					2	3	0	
WD-40	64742-47-8			3																	X	X				3	4	0	
Windshield Wiper Fluid (20% Methanol)	67-56-1	Liquid	gal				2														X					2	2	0	
Xylene Mixture	1330-20-7	Liquid	gal						1C												X	X				3	3	0	

## Appendix G

### List of ERR's and WARN's on the HMIS Worksheet

AeroERR: State cannot be Cryo	
AeroERR: lbs-Aero can only be used with the Aerosol State of CompGas	
AeroERR: Aerosol units have to be lbs or lbs-Aero	
AeroERR: incompatible hazard designated	
AmmoERR: State has to be Solid	
AmmoERR: units have to be primer	
AmmoERR: incompatible hazard designated	
CombFibERR: State has to be Solid	
CombFibERR: units have to be cu ft	
CombFibERR: incompatible hazard designated	
CombLiqERR: State has to be Liquid	
CombLiqERR: 3B state has to be Liquid or Solid	
CombLiqERR: units have to be gal or lbs	
CombLiqERR: incompatible hazard designated	
ExplosivERR: State has to be Solid or Liquid	
ExplosivERR: units have to be gal (Liq) or lbs (Liq and Solid)	
ExplosivERR: incompatible hazard designated	
FlamLiqERR: State has to be Liquid	
FlamLiqERR: units have to be gal or lbs	
FlamLiqERR: incompatible hazard designated	
FlamERR: if State is Liquid, identify 1A, 1B, or 1C under Flammable column. Mark X in column if State is Cryo, LiqGas, CompGas, or Solid	
FlamGasERR (Cryo): Units have to be gal	
FlamGasERR (Cryo): incompatible hazard designated	
FlamGasERR (LiqGas): Units have to be lbs	
FlamGasERR (LiqGas): incompatible hazard designated	
FlamGasERR (CompGas): Units have to be cu ft	
FlamGasERR (CompGas): incompatible hazard designated	
FlamSolERR: units have to be lbs	
FlamSolERR: incompatible hazard designated	
InertGasERR: State has to be Cryo, CompGas, or Liquefid Gas	
InertGasERR (Cryo): Units have to be gal	

InertGasERR (Cryo): incompatible hazard designated	
InertGasERR (CompGas): Units have to be cu ft	
InertGasERR (CompGas): incompatible hazard designated	
InertGasERR (LiqGas): Units have to be lbs	
InertGasERR (LiqGas): incompatible hazard designated	
LPG-ERR: State has to be Liquefied Gas	
LPG-ERR: incompatible hazard designated	
OrgPerERR: State has to be Solid or Liquid	
OrgPer"&AB3&"; ", "OrgPerERR (Solid): incompatible hazard designated	
OrgPer"&AB3&"; ", "OrgPerERR (Liq): incompatible hazard designated	
OxidizERR: State has to be Solid or Liq	
OxidizERR (Solid): units have to be lbs	
OxidizERR (Solid): incompatible hazard designated	
OxidizERR (Liquid): units have to be gal or lbs	
Oxidiz"&AC3&"; ", "OxidizERR (Liquid): incompatible hazard designated	
OxidizERR: State has to be Cryo, CompGas, or LiqGas	
OxidizERR (Cryo): units have to be gal	
OxidizERR (Cryo): incompatible hazard designated	
OxidizERR (CompGas): units have to be cu ft	
OxidizERR (CompGas): incompatible hazard designated	
OxidizERR (LiqGas): incompatible hazard designated	
PyroERR: State has to be Solid, Liq, or CompGas	
PyroERR (Solid): units have to be lbs	
PyroERR (Solid): incompatible hazard designated	
PyroERR (Liquid): units have to be gal or lbs	
PyroERR (Liquid): incompatible hazard designated	
PyroERR (CompGas): units have to be cu ft	
PyroERR (CompGas): incompatible hazard designate	
UnstabERR: State has to be Solid, Liq, or CompGas	
UnstabERR (Solid): units have to be lbs	
UnstabERR (Solid): incompatible hazard designated	
UnstabERR (Liquid): units have to be gal or lbs	
Unstab"&AE3&"; ", "UnstabERR (Liquid): incompatible hazard designated	

UnstabERR (CompGas): units have to be cu ft	
UnstabERR (CompGas): incompatible hazard designated	
H2OReactERR: State has to be Solid or Liq (Class 1 may also be LG or CG)	
H2OReactERR (Solid): units have to be lbs	
H2OReactERR (Solid): incompatible hazard designated	
H2OReactERR (Liquid): units have to be gal or lbs	
H2OReactERR (Liquid): incompatible hazard designated	
H2OReactERR (LG or CG): incompatible hazard designated	
BioHazERR: State has to be Solid, Liq, CompGas, or LiqGas	
BioHazERR (Solid): units have to be lbs	
BioHazERR (Solid): incompatible hazard designated	
BioHazERR (Liquid): units have to be gal or lbs	
BioHazERR (CompGas): units have to be cu ft	
BioHazERR (CompGas): incompatible hazard designated	
BioHazERR (LiqGas): units have to be lbs	
BioHazERR (LiqGas): incompatible hazard designated	
CarcinERR: State has to be Solid, Liq, CompGas, LiqGas, or Cryo	
CarcinERR (Solid): units have to be lbs	
CarcinERR (Liquid): units have to be gal or lbs	
CarcinERR (CompGas): units have to be cu ft	
CarcinERR (LiqGas): units have to be lbs	
CarcinERR (Cryogenic): units have to be gal	
CorrosvERR: State has to be Solid, Liq, CompGas, or LiqGas	
CorrosvERR(Solid): units have to be lbs	
CorrosvERR(Liq): units have to be gal or lbs	
CorrosvERR(CompGas): units have to be cu ft	
CorrosvERR(LiqGas): units have to be lbs	
HiToxERR: State has to be Solid, Liq, CompGas, or LiqGas	
HiToxERR(Solid): units have to be lbs	
HiToxERR (Solid): incompatible hazard designated	
HiToxERR(Liquid): units have to be gal or lbs	

HiToxERR (Liquid): incompatible hazard designated	
HiToxERR(CompGas): units have to be cu ft	
HiToxERR (CompGas): incompatible hazard designated	
HiToxERR(LiqGas): units have to be lbs	
HiToxERR (LiqGas): incompatible hazard designated	
IrritantERR: State has to be Solid, Liq, CompGas, LiqGas, or Cryo	
IrritantERR(Solid): units have to be lbs	
IrritantERR(Liquid): units have to be gal or lbs	
IrritantERR(CompGas): units have to be cu ft	
IrritantERR(LiquefiedGas): units have to be lbs	
IrritantERR(Cryogenic): units have to be gal	
OHH-ERR: State has to be Solid, Liq, CompGas, LiqGas, or Cryo	
OHH-ERR(Solid): units have to be lbs	
OHH-ERR(Liquid): units have to be gal or lbs	
OHH-ERR(CompGas): units have to be cu ft	
OHH-ERR(LiquefiedGas): units have to be lbs	
OHH-ERR(Cryogenic): units have to be gal	
RadioERR: Units have to be milliCi or microCi	
RadioERR: incompatible hazard designated	
SensitizrERR: State has to be Solid, Liq, CompGas, LiqGas, or Cryo	
SensitizrERR(Solid): units have to be lbs	
SensitizrERR(Liquid): units have to be gal or lbs	
SensitizrERR(CompGas): units have to be cu ft	
SensitizrERR(LiquefiedGas): units have to be lbs	
SensitizrERR(Cryogenic): units have to be gal	
ToxERR: State has to be Solid, Liq, CompGas, or LiqGas	
ToxERR(Solid): units have to be lbs	
ToxERR(Liquid): units have to be gal or lbs	
ToxERR(CompGas): units have to be cu ft	
ToxERR(LiqGas): units have to be lbs	
ERR 704 Health: hazard corresponding to placard not identified	
ERR 704 Health: placard value not indicated for identified hazard	
WARN 704 Health: Cryo Haz is less than IFC Table F101.2 value	

WARN 704 Health: Tox Haz is less than IFC Table F101.2 value	
WARN 704 Health: HiTox Haz is less than IFC Table F101.2 value	
ERR 704 Flam: hazard corresponding to placard not identified	
ERR 704 Flam: placard value not indicated for identified hazard	
WARN 704 Flam: CombFib Haz "&AQ3&" is less than IFC Table F101.2 value	
WARN 704 Flam: CombLiq "&W3&" Haz is less than IFC Table F101.2 value	
WARN 704 Flam: FlamLiq "&Y3&" Haz is less than IFC Table F101.2 value	
WARN 704 Flam: "&I3&" Haz is less than IFC Table F101.2 value	
WARN 704 Flam: Pyro "&I3&" Haz is less than IFC Table F101.2 value	
WARN 704 Flam: OrgPer "&AB3&" Haz is less than IFC Table F101.2 value	
ERR 704 Instab: hazard corresponding to placard not identified	
ERR 704 Instab: placard value not indicated for identified hazard	
WARN 704 Instab: OrgPer "&AB3&" Haz is less than IFC Table F101.2 value	
WARN 704 Instab: Unstab (React) "&AE3&" Haz is less than IFC Table F101.2 value	
WARN 704 Instab: Expl "&X3&" Haz is less than IFC Table F101.2 value	
ERR 704 SpecHaz: hazard corresponding to placard not identified	
ERR 704 SpecHaz: placard value not indicated for identified hazard	
WARN 704 SpecHaz: Oxidiz Haz/Plac "&AC3&"/"&AS3&" does not match IFC Table F101.2	
WARN 704 SpecHaz: combo Oxidiz-H2OReact Haz/Plac "&AC3&"/"&AF3&"/"&AS3&" does not match IFC Table F101.2	
WARN 704 SpecHaz: H2OReact Haz/Plac "&AF3&"/"&AS3&" does not match IFC Table F101.2	

ERR: data has been entered in the row either without a Product / Chemical or a HazMat Area identified	
ERR: specified amount cannot be less than zero	
ERR: total amount in storage cannot be less than the amount stored in approved containers	
WARN: amount identified in Storage is less than the container size	
ERR: HazMat Area "&D3&" is not identified on the HazMat_Areas worksheets	
ERR: HazMat Area "&D3&" is not identified as Indoor or Outdoor on HazMat_Areas worksheets	
WARN: "&IF(NOT(ISERROR(SEARCH("In",B3))),"Indoor","Outdoor")&"HazMat Area "&D3&" is identified as being on Floor	

# Appendix H No-HazMat Template



**DENVER**  
THE MILE HIGH CITY

CITY AND COUNTY OF DENVER  
Department of Safety  
Fire Department  
Fire Prevention Division  
745 W. Colfax Ave.  
Denver, CO 80204  
p: 720-913-3474  
f: 720-913-3596

## DISCLOSURE FORM – BELOW PERMITTABLE AMOUNTS

Dear Mr./Ms. <<<Name>>>,

Based upon our review of your HMIS, we have determined that you do not have sufficient quantities of Hazardous Materials at your business located at <<<Address>>> to warrant an annual HazMat Operational Permit or corresponding inspection. Hazardous Materials include, but **are not limited to** fuel, batteries, propane/LPG, and compressed gases or chemicals which have *any* of the following properties: Aerosols, Carcinogenic, Corrosive, Cryogenic, Explosive, Flammable, Highly Toxic, Inert &/or Simple Asphyxiant, Irritants, Organics Peroxides, Oxidizers, Pyrophoric, Radioactive, Sensitizer, Toxic, Unstable or Water Reactive or Other Health Hazards.

In order to proceed further with this process, you must submit a letter to this office on your company's letterhead stating that you have no quantities of Hazardous Materials in excess of the Permit Amounts anywhere at your facility. Your letter must contain all of the information below:

Date  
Business Name  
Business Address (and facility/property address if different)  
Denver Fire Department (DFD) Occupancy ID Number  
Business Phone Number  
Contact Name  
Contact Phone Number  
Contact Fax Number

Simple statement,  
"With respect to Hazardous Materials regulated by the International Fire Code as amended by the City and County of Denver, there are no quantities of in excess of the Permit Amounts established therein in our facility or on our property at the address identified above."

Printed Name of Responsible Party, Signature of Responsible Party

Upon receipt of the letter, the business will be removed from FPD's Hazardous Materials list. The letter will be used as legal documentation the business operators disclosed the absence of any permissible amounts of Hazardous Materials on site and accepts all liability of such disclosure. A signed confirmation will be returned to the identified address. Any future changes to the business or facility

that includes Hazardous Materials nullifies the confirmation. It is the responsibility of the business operators to contact DFD and submit a new HMR (Hazardous Materials Report).

DFD will still perform an annual inspection of the facility. A copy of the submitted letter and the confirmation shall be available upon request by the DFD inspector.

This letter may *either* be emailed ([DFDHMIS@denvergov.org](mailto:DFDHMIS@denvergov.org)), FAXed to the attention of HazMat Unit (720.913.3596), **or** mailed to the attention of HazMat Unit (FPD address above).

Thank you for your time and cooperation in this matter.

Denver Fire Department  
Fire Prevention Division  
Hazardous Materials Unit

## Appendix I 60-Day Renewal Notice

CITY AND COUNTY OF DENVER  
Department of Safety - Fire Department  
Fire Prevention Division  
745 W. Colfax Ave. Denver, CO 80204  
p: 720.913.3474 f: 720.913.3587



# Hazardous Materials Reporting 60 Day Notice

Date: \_\_\_\_\_

Occupancy ID #: \_\_\_\_\_

Dear Current Occupant or Business Owner:

This letter constitutes formal notification your business is required to submit its annual Hazardous Materials Permit Application (HMPA) within 60 days of the above date. The HMPA is required annually per the International Fire Code as amended by the City and County of Denver (IFC) to document the current operations involving Hazardous Materials (HazMat) and the amounts used, dispensed, transported, stored, produced, handled, etc. at your facility.

***This is the only Notice you will receive.***

HazMat reporting is required by the Denver Fire Department (DFD) and the IFC (Section 2701.5.2). The information is reviewed and used to process and issue the required HazMat Operational Permit(s). Please disregard this notice only if the HMPA for the facility identified above has already been submitted for the current year.

There are a minimum of two components to the annual HMPA: a HazMat Report (**HMR**) and a HazMat Management Plan (**HMMP**). Depending on the quantities and nature of the HazMat involved, additional components (e.g., an Emergency Action Plan) may be required. If a **SARA Title III-Tier II Report** is required to be filed for the facility, a copy must also be included in the HMPA.

An electronic filing system has been established to expedite the HMPA process. **Please do not mail paper forms.** Please go to the DFD website [www.denvergov.org/dfd](http://www.denvergov.org/dfd), and in the "Search" field located in the upper right side of the screen, type in "**Hazardous Materials/HMR**". Next, click on the option that says "**Hazardous Materials / HMR**", and that will take you to the HMR page on our website. Then go to the field to the right of the screen that says "**Downloadable Forms**" to obtain the forms required for completing the HMR or to view our permit fee table.

As of **June 1, 2011** DFD is no longer accepting the 2003 Excel version of the Hazardous Materials Inventory Statement (HMIS) aka Chemical Inventory Report. **All applications must include the 2007 MS Excel HMR.** The HMR must be completed using 2007 or later (e.g., 2010) versions of Microsoft Excel. An informational MS PowerPoint tutorial is available on the [www.denvergov.org/dfd](http://www.denvergov.org/dfd) website to assist properly converting 2003 HMIS spreadsheet data into the 2007 MS Excel HMR workbook format.

Please note the latest version of the HMR must be downloaded and completed even if the previous HMPA submitted for the subject facility included an HMR. This is due to the HMR constantly being refined and reposted as code provisions and policies are updated.

Reasonable assistance is available to applicants from the FPD Engineering Group and the Hazardous Materials Unit but DFD personnel cannot complete the HMPA for the facility. Extensive instructions are provided in MS Word on the DFD website (above) for completing the current HMR workbook.

The most often recurring mistake is data being “pasted” into user-input cells. It’s reiterated over and over in the instructions (and repeated here) that “Paste Values” (vs. “Paste”) has to be selected to bulk-insert data in the HMR worksheets.

An additional fee of **\$100.00** for HMR’s with less than 100 materials, or **\$1.00** per line item if more than 100 materials will be charged in addition to the standard permit fees for all HMRs that need to be fixed, adjusted, corrected, or regenerated per section 105.6.67 of the IFC.

HMPA renewals may either be mailed (on CD – not paper) to the address above or emailed to [DFDHMIS@denvergov.org](mailto:DFDHMIS@denvergov.org). After the electronic HMR is reviewed, an invoice will be mailed back. Payment has to be received within 30 days. Once the check is processed, a HazMat Operational Permit is issued. An inspection will then be scheduled to verify the information reported in the HMPA.

Please note for Tier 2 filings, Colorado now requires electronicTier2Submit files be sent via email, CD, or diskette for Reporting Year 2014 (due March 1, 2014). ***Please do not mail paper forms.*** Only files using the EPA Tier2Submit software or the exact Tier2Submit file format can be accepted.

As part of the DFD HMPA, the **Tier 2 CD** may be mailed to the address above or emailed as attachments to [DFDTIER2@denvergov.org](mailto:DFDTIER2@denvergov.org). For more information on Tier 2 reporting follow the link to the CDPHE website: <http://www.cdphe.state.co.us/oeis/sara/tier2submit.html>.

If the quantity of HazMat is under the Permit Amounts, please mail, email or fax to FPD a letter stating such. The details of this process are located in Appendix H of the HMPA completion instructions on the DFD HazMat web page. The FPD HazMat Unit will contact the applicant to discuss and verify the situation.

Please call the HazMat Unit at (720) 913-3474 with any questions or comments.

Thank you.

# Appendix J

## Memo – HazMat Reporting and Permits in Denver



CITY AND COUNTY OF DENVER  
Department of Safety  
Fire Department  
Fire Prevention Division

P. O. Box 40385  
Denver, CO 80204  
p: 720.913.3474  
f: 720.913.3587

April 29, 2011

### MEMORANDUM

TO: All Firms Required to Submit Hazardous Materials Inventory Statements (HMIS)

FROM: Joseph L. Gonzales, Division Chief   
Department of Safety - Fire Prevention

SUBJECT: **HAZARDOUS MATERIALS REPORTING AND PERMITS IN DENVER**

The purpose of this memorandum is to clarify the Denver Fire Department's enforcement of hazardous materials reporting requirements.

#### Legal Requirements

The Denver Fire Department's HMIS program incorporates reporting requirements from:

- **Title III of SARA, the Superfund Amendments and Reauthorization Act**, which deals with hazardous materials
- **EPCRA** (Emergency Response Planning and Community Right-to-Know Act).
- **The City and County of Denver's requirements for hazardous materials operational permits, Denver Fire Code Section 105.6.63**. The permit process provides the Denver Fire Department with information on what, where, how, and when specific hazards are being installed, manufactured, stored, and/or used within the city, and allows us to meet the Sara Title III reporting requirements.

The Denver Fire Department's program is further supported by proposed legislation currently before the U.S. Senate, the **Safe Chemical Act of 2011**, which requires, among other things, that all hazard potential of any chemical must be divulged for first responders and the community to quickly determine risks and assess health and environmental concerns.

SARA Title III, signed into law by President Ronald Reagan on October 17, 1986, has a far-reaching impact on industry, city and state governments, and the community, as each of these entities is required to participate in the planning process and the right-to-know provisions.

SARA Title III is purposely vague on the exact method of implementation of required activities in order to allow for local adaptation to particular circumstances. This unfunded mandate is not given specific program guidelines, but in Denver the 1986 SARA Title III mandate was approved to merge with the fire operational permits program that has been in effect since the 1960s. Over the years, this has caused misunderstanding and confusion; hence, the present memorandum and other communications over the years.

**DFD's Hazardous Materials Program**

The Denver Fire Department operates a comprehensive hazardous materials environmental protection program through issuing Hazardous Materials Permits and conducting Fire Safety Inspections. The permit program includes gathering information on site-specific hazardous chemicals for police departments, hospitals, health organizations, the State of Colorado and the community we serve. This information allows emergency response pre-planning and analysis of hazards for the purpose of protecting the public in the event of a release of a hazardous chemical into the environment. The Fire Department provides training for all employees and first responders who are exposed or may become exposed to the release of hazardous chemicals.

The release of hazardous chemical(s) into the environment may have either a short-term or long-term impact on the community, depending upon the chemical(s) involved, the complete property hazard categories of the chemical(s), and the anticipated reactions of the chemical(s).

Denver Fire Code section 105.6.63 requires an operational permit to manufacture, store, transport, dispense, use or handle hazardous materials in excess of the amounts listed in Table 105.6.63.

Hazardous materials are those chemicals or substances defined as such in the Denver Fire Code. Mixtures shall be classified in accordance with hazards of the mixture as a whole. Mixtures of hazardous materials shall be classified in accordance with nationally recognized reference standards by an approved, qualified organization (e.g., Chemical Manufacturers Association), by Material Safety Data Sheets (MSDS), or by other approved method.

Hazardous materials shall be classified according to hazard categories. The material categories include physical and health hazards. **In cases where a material has multiple hazards, all hazards shall be addressed and shall be listed in the Hazardous Materials Inventory Statement (HMIS) submitted and a permit must be obtained for each hazard category. There shall be no exceptions.** If a particular hazardous material has multiple hazards inherent to its make-up, (i.e. gasoline is considered to be a Class 1B flammable liquid, carcinogen and an irritant) all properties of any given hazardous material must be disclosed in the HMIS.

Per Section 2701.5.2.1 of the Denver Fire Code Amendments, "The fire code official is authorized to require HMIS submittals to be prepared by a qualified individual or firm acceptable to the fire code official in accordance with Section 104.7.2." If upon inspection of any given facility it is determined that there has been significant errors or omissions in the preparing and submittal of an HMIS, the Denver Fire Department reserves the right to mandate that the business hire a "qualified individual or firm" to assist them with the preparation and re-submittal of their HMIS.

Your sincere consideration and cooperation are requested in ensuring that all hazard categories are included for each chemical/material listed on your firm's HMIS.

Thank you.

## Appendix K Electronic Records Policy

<b><u>CITY AND COUNTY OF DENVER</u>                      <u>POLICY</u>                      <u>DENVER</u></b> <b><u>FIRE DEPARTMENT</u></b>		
Subject: <b>Material Safety Data Sheets (MSDS)</b>		
Reference: <b>International Fire Code 2703, 2703.4, Denver Fire Code Amendments 2703.4</b>		
Approved: <p style="text-align: center;">Joseph L. Gonzales, Division Chief, Fire Prevention and Investigation Division</p>		
Number: <b>IFC-2703.4</b>	Effective Date: <b>DRAFT</b>	Page: <b>1 of 3</b>

**This policy is meant to provide basic information for MSDS Books/Binders that are required at commercial occupancies. In any given occupancy, many other Fire Code requirements may be enforced. These will be addressed by the Fire Inspector during a premise inspection. Any questions can be addressed to the Fire Prevention Office Monday thru Friday between 6:30 a.m. and 4:30 p.m. at (720) 913-3474 or you may visit our office. We are located at 745 W. Colfax Avenue, 1<sup>st</sup> floor.**

**SCOPE:**

The purpose of having a Material Safety Data Sheet (MSDS) Book/Binder on site is to allow emergency responders to quickly and accurately identify chemicals stored or utilized at an occupancy and to assist emergency responders in mitigating hazardous material spills, leaks or releases.

**II. AUTHORITY HAVING JURISDICTION**

The **Denver Fire Department** serves as the reporting agency for the City and County of Denver and is the **AHJ** for the City and County of Denver.

**II. LOCATION OF THE ONSITE MATERIAL SAFETY DATA SHEET (MSDS) BOOK/BINDER:**

The MSDS shall be readily available on premises for hazardous materials which are regulated by the International Fire Code, Chapter 2703. MSDS books/binders shall be located at the main entrance or at a location approved by the Denver Fire Department. When a Hazardous Substance is developed in a laboratory, all available information on those substances shall be documented and maintained at a location approved by the Denver Fire Department.

- Typically, the location for an MSDS book/binder will be at the main entrance of the occupancy.
- If the Fire Command Center (FCC) or the Fire Alarm Panel (FAC) is located at the main entrance, the MSDS must be placed next to the FCC or FAC.
- If the security of the MSDS book is a concern, a Denver Fire Department representative may authorize another location close by to post the MSDS book/binder.
- Each occupancy that is required to have an MSDS must have a separate book for OSHA “Right to Know” requirements. A separate MSDS book/binder must be available and maintained for first responders.

**COMPOSITION OF MSDS BOOKS/BINDERS:**

MSDS books/binders must contain information to assist first responders in mitigating hazardous material spills, leaks and releases. All materials, chemicals and products that have an MSDS must be represented in the MSDS book/binder.

The contents of the MSDS binder can be as follows:

- **MSDS FOR FACILITIES WITH LESS THAN 25 MSDS ITEMS ON SITE**
  - A RED or YELLOW three ring binder marked as MSDS.
  - Printed hard copy forms for each product or chemicals contained within the facility and on facility grounds.
  - In lieu of printed hard copy forms, a USB flash drive containing the MSDS library for all products and chemicals contained within the facility and on facility grounds can be placed in the MSDS binder. USB flash drives must be periodically updated to account for changes in chemical inventory.
  - A current printed hard copy of the line item Hazardous Material Inventory Statement as approved by the Denver Fire Department.
  - A current printed hard copy of the Hazardous Material Management Plan (HMMP) for the facility.
- **MSDS FOR FACILITIES WITH MORE THAN 25 ITEMS ON SITE**
  - A RED or YELLOW three ring binder marked as MSDS.
  - A USB flash drive containing the MSDS forms for all products and chemicals contained within the facility or on facility grounds must be placed in the MSDS binder.
  - A current printed hard copy of the line item Hazardous Material Inventory Statement as approved by the Denver Fire Department.
  - A current printed hard copy of the Hazardous Material Management Plan (HMMP) for the facility.

***MAINTENANCE OF MSDS BOOK/BINDERS:***

The maintenance of the MSDS binder and chemical library contained within will greatly assist first responders in mitigating an emergency at a facility that has hazardous materials.

MSDS books must be maintained and updated as product and chemical inventory changes. USB flash drives must have an updated chemical inventory of MSDS forms.