

## PHARMACEUTICAL



Manufacturing of pharmaceutical products such as drugs, vitamins, minerals or herbs involves a broad range of processes with the potential to generate harmful dust. Some of the common applications include: drying (spray, rotary), mixing, blending, screening, tableting, encapsulating, coating, milling/sizing, weighing, conveying and packing of dry finished products. The pharmaceutical dust can present unique challenges due to the potential effects to workers, chemical hazards in the industry and the value of the material. In addition to protecting workers, dust reclamation and cross-contamination may be important considerations for you as well.

### **Key Benefits of Pharmaceutical Filtration Equipment and Filters**

- Worker health protection and minimized potential long term liability
- Improved product quality
- Reduced housekeeping
- OSHA & EPA regulation compliance

### **Best Available Control Technology (BACT)**

In addition to manufacturing difficulties, you are challenged with stringent environmental compliance regulations that often require a Best Available environmental Control Technology. We can help you optimize your dust collection performance so you can focus on ways to improve your manufacturing process. We offer technical services that include inspection and evaluation programs which provide valuable insights toward understanding dust collection problems and solutions, from a piece of collection equipment to a single baghouse to your entire emissions control system.

#### OVERVIEW

- **Contaminant Characteristics**

Contaminants from pharmaceutical processes are generally very fine, dry, light particulate that becomes airborne with little air movement. Contaminant is generated while the product is being conveyed or loaded with the displaced volume carrying the dust allowing it to become airborne. The size, process, speed and material properties will impact the dust characteristics and generation rates. In certain pharmaceutical applications, some of the dusts may be agglomerative or hygroscopic.

### **Pharmaceutical Dust Hazards**

Worker inhalation and exposure to biologically active dusts is an important concern on pharmaceutical applications. An additional concern is cross-contamination with other materials which may impact product quality and safety. Materials commonly used in pharmaceutical applications may also be combustible and or explosive posing a significant threat to worker and facility safety.

### **Design Approach for Pharmaceutical Dust Control**

Approaching pharmaceutical applications begins with aligning the control technique with the process and any additional special considerations such as reclaiming, cross-contamination, product quality issues and more.

- **Source Capture.** Whenever possible, capturing and controlling the contaminant at the source is the recommended approach. Source capture involves utilizing various types of hoods to extract the contaminant at or near the generation point to protect the worker and prevent the fume from migrating elsewhere in the facility. Source capture is the most effective means of capture and requires the least amount of energy and initial investment to accomplish. Source capture can be accomplished utilizing fume extraction arms or local fixed hoods incorporated as part of the machine such as a conveyor or mixer.
- **Local Containment.** Containment isolates the dust generating process from the rest of facility and protects the contained area. An example would be a partitioned area kept under negative pressure with the extracted air ducted to a dust collector located remotely or drawn directly into a local dust collector. In some cases, the filtered air can be returned to create a push-pull airflow pattern to improve the contaminant control.

Dust collection solutions for pharmaceutical processes may also require special options or accessories to improve the safety and reliability of the system. Bag-in / bag-out filter and collection drum options can be used to eliminate exposure and cross-contamination when performing filter and dust removal maintenance. Continuous liners can be incorporated as part of the dust removal process. Stainless steel construction, ledge less design and FDA compliant paint are also potential options. When collecting combustible dusts, fire retardant cartridge filters are recommended and if the dust is explosive, explosion vents or other safety precautions may be required.

#### **TECHNICAL SERVICES**

##### **Are you experiencing any of these issues in your operation?**

- Insufficient air flow
- High differential pressure
- Dusty environment

We can help. We offer technical services that include inspection and evaluation programs which provide valuable insights toward understanding dust collection problems and solutions, from a piece of collection equipment to a single baghouse to your entire emissions control system. After nearly 50 years in the filtration business, we have dealt with billions of particles from hundreds of sources, in dozens of industries. We have the expertise to best optimize your air stream and plant operations.

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