

# PLASTICS PROCESSING

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## Plastics Manufacturing, the Third Largest Industry in the US

Manufacturing facilities in the U.S., and globally, are running at capacity. The demand for all types of finished plastics remains high in all markets. Plastics processing covers a broad range of operations. Several of the more common processes include: blow moulding, calendaring, compression moulding, cutting, grinding on plastics, heat sealing, injection moulding, plastic casting, plastic curing, plastic extrusion, plastic machining and plastic welding.

Injection moulding, compression moulding and blow moulding processes are used to convert raw thermoplastics from pellet or powder form into common useable plastic parts such as forks, bottles and cabinets. This process involves heating the plastic pellets or powders to a liquid state and then injecting, or blowing, the liquid plastic into a cooled mould where it is held under pressure until it cools to the solid state again.

Plastic extruding involves forcing molten plastic through a shaping die under pressure. This process starts with solid pellets or powders being fed into a hopper where the plastic is heated to a liquid or molten state. The plastic melt is then forced through the die with the formed material emerging from the die. The plastic is then cooled with water or air and post-processed to create the desired part as necessary.

The last thing you need is your plastic dust and fumes collection equipment becoming a contributing factor to unscheduled downtime and lost production. We want to use our experience to help you. For example, a PVC plant in North America had an elutriator baghouse that needed to move more air to meet their production requirements. Years ago we converted the dust collector to BHA PulseuPleat® filter elements, and at the time, it met their needs. Recently, demand increased again, and the plant needed to move 40% more air than the original design. We worked with the customer to design a BHA PulseuPleat filter that met their filter-area requirements and prevented the need for new capital projects to replace the dust collector.

### Key benefits from air filtration for the mist, fumes, smoke and dust generated by plastic processing include:

- Protecting worker health
- Reduced exhaust air make-up requirements through recirculated conditioned air
- Improved part / product quality
- Reduced housekeeping costs
- Compliance with even the strictest federal, state and local environmental standards

## Contaminant Characteristics

Contaminants from plastic processing applications can produce wet mists, fumes and dust from extrusion and moulding processes as well as dry contaminants on machining applications.

Mists, fumes and dust from plastic moulding and curing machines result when thermoplastics are heated to a liquid or molten state. The primary contaminant is a submicronic smoke ( $> 0.1 \mu\text{m}$ ) consisting of plasticizer emitted as the plastic is injected or poured into the die. Fumes from plastic processing extrusion machines also result in plasticizer smoke emitted as the plastic emerges from the die.

Dusts and fine particulates from plastic dry processing machines and cutting applications range in both size and properties depending upon the plastic type. These dust particles can range in shape from fiber fragments to fine round spheres. Based on the operation, in addition to the dust particles, heat from the machining process can result in fume or smoke being emitted along with the dust particles. The dusts produced may also pose a combustion or explosion hazard.

## Recommended Approaches for Plastics Dust Contaminants

- **Source Capture.** Whenever possible, capturing the mist, dust and fume at the source is the recommended approach for controlling plastic fume and dust emissions. Source capture typically involves utilizing canopy hoods with clear, plastic drop curtains or guards with flexible ducting to contain the majority of fumes at or near the generation source to protect the worker and prevent the fume from migrating elsewhere in the facility. Source capture can also be accomplished utilizing machine mount mist collectors or by ducting to ceiling mounted or central fume collection systems. Source capture is the most effective means of capture and requires the least amount of energy and initial investment to accomplish.

- **Local Containment.** Containment isolates the process from the rest of facility and protects the contained area. An example would be a partitioned area kept under negative pressure such as a cross draft booth where one side of the booth is configured as a hood that extracts the contaminants horizontally across the booth. The extracted air can either be ducted to a dust collector located remotely or drawn directly into a collector that incorporates a hood. In some cases, the filtered air can be returned to create a push-pull airflow pattern to improve the contaminant control.
- **Ambient Air Collection.** When source capture is not possible, filtering ambient air can be utilized to control the fume concentrations in the facility to a more acceptable level. Ambient systems will help remove the ambient haze caused by the airborne pollutants but these systems will not protect the worker's breathing zone.

## SMOG-HOG® ELECTROSTATIC PRECIPITATOR (ESP) MIST COLLECTORS

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### Central System Mist Collectors

Centralized Smog-Hog electrostatic precipitators are used to control hazardous emissions which pose a threat to the environment and your business. Available with a unicell or separate ionizer and collection cell configuration, these systems provide customizable engineered solutions for tough emissions from asphalts, industrial cooking, plasticizers, textiles, rubber and other processes.



[Smog-Hog PSH / PSG Central System Mist Collectors](#)

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### Ceiling Mount Mist Collectors

Smog-Hog mist collectors can be ducted from your ceiling to save valuable factory floor space. These heavy-duty electrostatic precipitators offer long-term industrial air cleaning to eliminate smoke, mist and dust generated by brazing, casting, flame cutting, drilling and more.



[Smog-Hog MSH Compact Electrostatic Mist Collectors](#)

[Smog-Hog SG Electrostatic Mist Collectors](#)

[Smog-Hog SHN Electrostatic Mist Collectors](#)

[Smog-Hog PSG Central System Mist Collectors](#)

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## Machine Mount Mist Collectors

Smaller, more compact mist collectors are available when floor space in your facility is at a premium. These Smog-Hogs can be mounted directly onto machining centers to clean the air and recycle machining fluids.

- [Smog-Hog MSH Compact Electrostatic Mist Collectors](#)
- [Smog-Hog SHN Electrostatic Mist Collectors](#)



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## Portable ESP Mist Collectors

The Smog-Hog PCN is a portable unit ideal for situations where large hoods are impractical, smoke-producing machinery is used intermittently or an employee moves from one work station to another. The PCN is an adaptable, efficient and easily-maintained source capture system. The source capture swing arm and hood can be positioned directly over the smoke and fume source to capture dangerous contaminants that can cause respiratory problems and create safety and maintenance concerns.

[Smog-Hog PCN Portable Mist Collectors](#)



## UAS® SMOG-HOG® MEDIA MIST COLLECTORS

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### New Media Mist Collector: SmogHog Media Mist Collector

The self-contained, SHM SmogHog Media collector effectively removes mist and smoke from the air using our mist collection technologies that have been cleaning the air for 50 years. This series of collectors includes a three stage filtration process that results in a 99% reduction of mist concentration. The unit can be mounted directly on a machining center or mounted remotely connecting a single or multiple machines using ducting. The series was designed to deliver performance, easy maintenance with flexible configurations to meet your requirements.

[SHM SmogHog Media Mist Collector](#)



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## Ceiling / Wall Mount Media Bag Dust Collectors

The UAS DA, DB and DBM dust and mist collector removes smoke, dust, oil mist and other pollutants from many industrial processes. Available in three configurations UAS DA, DB and DBM, these media dust and mist collectors capture wet and dry particles.

[UAS Models DA, DB, DBM Dust & Mist Collectors](#)

