



ESTA



Building
the BUSINESS of
show Business

INTRODUCTION
TO
MODERN
ATMOSPHERIC
EFFECTS

4th Edition



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This booklet is designed to inform you about current fog-making technologies and give suggestions for their safe and effective use. ESTA does not endorse any specific fog-making technology, product, or technique.

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Basic Fog Use Guidelines



- Determine the appropriate technology for the application.
- Make only as much fog as necessary.
- Deliver fog only where it is necessary.
- Deliver fog only when it is necessary.
- Avoid exposing people to the direct output of fog machines.
- Monitor and control liquid accumulation.
- Post appropriate warnings.
- Follow manufacturers' instructions.
- Read this booklet.

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Introduction



“The spells of the hero, beneath the castle, conjure up volumes of vapor, which at first, float dimly in the air, thicken into a film, and then a mist, till the dark masses of clouds roll over and melt into each other, and the stage is entirely enveloped, like the summit of some sky-clearing mountain.”

So reported the New York Mirror about a dramatization of Ivanhoe at the Bowery Theatre in 1831. Atmospheric effects have been part of theatrical productions since long before this show, almost since the beginning of theatre. The Greeks used burning pitch and resinous torches, and in Shakespeare’s time the smoke from black powder charges blew across the stage of the Globe outside London. Over the years a wide variety of methods have been used to make something that looks like smoke, clouds, haze, or mist on stage. Many people working in the entertainment industry today can remember loading electric heater cones with ammonium chloride (sal ammoniac), pumping a bee smoker, or lighting smoke cookies or pellets to gain the desired effect. Titanium tetrachloride, which produces thin white smoke when exposed to the air, has been used, even though contact with moisture produces corrosive hydrogen chloride gas as well as a cloud of white titanium dioxide. With the exception of steam, the early atmospheric effects techniques offered very little control over where the effects would go and could not be easily stopped and started on cue. Many of them were unacceptably toxic by modern health standards, and many of them were fire hazards.

Today’s atmospheric effects are fundamentally different from most of the earlier effects in that they are almost always fog effects. The fog might be shot from a machine in a big burst that looks like smoke, or it might roll across the floor as low, white clouds, or it might float almost invisibly in the air as a thin haze; but almost all modern atmospheric effects are fogs: tiny droplets of liquid floating in the air. Glycol-based fog systems (often called “smoke machines”) produce a fog in which the droplets are a mixture of water and glycol or glycerin. The familiar dry ice fog machine produces a fog in which the droplets are water. The machines known as “hazers” produce a thin haze of highly refined mineral oil, glycol, or some other fluid. All of them produce aerosols of liquid droplets suspended in the air.

Modern fog systems can produce almost all the effects
