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## The Best Fog Chiller - A Tutorial

One of my must have Halloween yard decoration tools is a fog chiller. The purpose is to create an eerie, low laying, rolling fog effect that always earns accolades on the big night.

There are some (limited) commercial models, and they are ridiculously over priced for use once a year. There are instructions all over the Internet for how to make your own, but they all involve a whole lot of tools, dry ice, and professional quality smoke machines. Well no more.



I've designed and built three different fog chillers at this point, and finally found a design that I fell in love with.

### Supplies:

fog machine (with timer, you really can't use one where you have to press a button to start it for this)

large storage tub

PVC pipe

Drill with some kind of circular cutting bit

and for the big night: lots of ice, enough to fill the tub with some left over to account for melting

A bit of very simple fog machine theory and safety to get started: the machine heats up the specially designed liquid to the point that it is between a liquid and a gas, sort of like a vapor; which means that the fog is much warmer than you would think, but cools down pretty quickly when it hits the exposed air. The fog still tends to shoot up quite a bit and not move much and

normally dissipates only a few feet from the machine. It's also easily blown around at this phase.

However, were the fog to be cooled down in a contained area immediately after being produced, the fog would stay much closer to the ground, and travel much farther, because the external force of exposed air will not be able to cause as fast a change. This results in long lasting, continually spouting rolling fog that covers your entire lawn and very well may cover your entire neighborhood with a low rolling fog anywhere from a few inches to two feet high, depending on proximity to the machine and wind conditions.

For safety purposes, when that machine is running, stay away from any exposed metal parts - you WILL get burned. It takes a lot of heat to get that fog rolling, and the metal parts do become extremely hot.

On to the tutorial.

1. Measure the size of the metal ring on your fog machine (the part that shoots out the fog) and purchase PVC pipe just wide enough to slide over the ring.
2. Cut a length (your choice) of PVC pipe to guide the fog into the storage tub. Just remember, the goal is to slow down the fog before it hits the air. A longer stretch of PVC pipe will slow it down faster, but will be harder to work with. The fog chiller pictured above had about a 2 foot length of PVC pipe.
3. Find some kind of drill bit slightly smaller than the width of your PVC pipe. There are many varieties of circular bits. The best would most likely be a step drill bit, but they are the most expensive option. The next step down would be a spade drill bit, and that would work just fine.

Whatever bit you choose, drill a hole near the bottom of the narrower side of the storage tub. Then drill 1 or 2 holes near the top of the opposite side of the storage tub. These holes release the fog into the air, and should be near the top so that when the tub is filled with ice, the fog has to travel through the ice to reach the holes and get out). I strongly recommend finding someone to help you with this step, since these tubs can be very difficult to drill through. It is a time consuming step, but one that is worth it.

There is an alternate way I wound up switching to when I broke the only bit I had the right size for the job. Draw a circle slightly larger the size you need on the tub, then drill a hole with a regular bit pretty close to center. Working with a sharp X-Acto knife, cut 4 to 8 lines through the tub to various points on the outside of the circle.

Step 4: Push the length of PVC pipe that you cut in step 2 through the hole near the bottom of the tub and secure with epoxy, plumber's putty, or even the all mighty king of adhesives: Duct tape. There should be a snug fit to ensure that as small an amount of fog as possible is lost when the machine is running. Try to keep the inserted end of the pipe as close the bottom of the tub as possible (I'm actually going to try cutting the PVC on an angle to aim more of the fog towards the bottom this year) to allow for maximum chill time.

Step 5: Decorate your fog chiller. Either make it so that it is hidden from sight (mine is green because it was going to be hidden among some bushes), or design it to be a set piece in and of itself (a fire breathing dragon perhaps? a cauldron? you are only limited by your imagination here).

Step 6: Test it. Put the lid on securely (don't tape it shut as you do need to get in there to add more ice as necessary on Halloween; be warned, when you do open it, you will get a face full of fog, and it will take a few minutes to get the fog going again, but if you run it for more than a few hours, you will need to add more ice or the effect will become progressively worse) Just run the machine for a few minutes without ice to see if there are any leaks in your system. Also test various locations in your yard to see how the architecture and wind conditions impact the direction of the fog. You don't want to just send all of your hard work rolling into your neighbor's yard, do you? If you have the time, pick up three or four bags of ice to see how the cooling affects fog direction/strength. Don't open the bags, just toss them in, that way you can save them for Halloween night.

Step 7: The Big Night. Load that sucker up with bags of ice (you don't even need to open them) and set your timer to shoot off maybe once ever 45 seconds to a minute, maybe less, maybe more; you'll be able to see pretty quickly if it needs further adjustment. The fog will go into the tub and will very slowly roll out of the two higher holes. The remainder will stay trapped in the tub and be far more dense than the first few minutes. Add some colored spot lights aimed very low at the machine from various points throughout the yard (last year I dedicated three lights to this: one opposite the machine in the front of the yard, one right next to the machine and aiming away from the yard, and one aiming straight past the machine, but any light you aim low will add an eerie hue to the proceedings) and presto! Instant ambiance that makes even cheaper store bought decorations look creepy.



This shot was taken with only three bags of ice in the machine and already the fog moved slower and did not go nearly as high. Without the chiller, the fog would shoot straight up past the second story windows.