

Builder's Guide

Dust Demonstration

This builder's guide is a set of materials and directions to build the demonstration showing how dust can affect a person's lungs when wearing a mask and when not wearing a mask on a construction site.

Materials

- 1) One 20 gallon fish tank approximately 24" x 12" x 16"
- 2) Approximately 4 lbs of sawdust (enough to blanket the bottom of the fish tank with 2" of sawdust, spread evenly)
- 3) One hair dryer with a no or low heat setting
- 4) One 12" x 24" piece of cardboard
- 5) 72" of Velcro tape
- 6) Two 4" x 4" gauze pads, one layer
- 7) Two 2" x 2" gauze pads
- 8) One standard dust mask
- 9) Two 4" long 3" diameter PVC Pipes
- 10) Two 3" to 1.5" PVC Connectors
- 11) Two 3" long 1.5" PVC Pipes
- 12) Two 90 degree 1.5" PVC Connectors
- 13) Two 14" long 1.5" PVC Pipes
- 14) Two 1.5" PVC straight connectors
- 15) One 16" long 2 x 4
- 16) 12oz. black spray paint
- 17) Scotch tape (not critical, but may make building easier)

Building Steps

- 1) Paint cardboard at 2 x 4 black with the spray paint and allow time to dry. Steps 2, 5 through 9, and 12 may be done while items are drying.
- 2) Fill fish tank with enough sawdust to fill the bottom with roughly 2" of sawdust, spread evenly.



- 3) Line perimeter of the top opening of the fish tank and perimeter of the cardboard with Velcro tape.



- 4) Set 2 x 4 inside tank, parallel to one of the long sides and leaving a 3" gap between the side of the tank and the edge of the wood. Note, this will be the "front" of the demonstration.



- 5) Stretch gauze pad over one end of 4" long 3" diameter PVC.



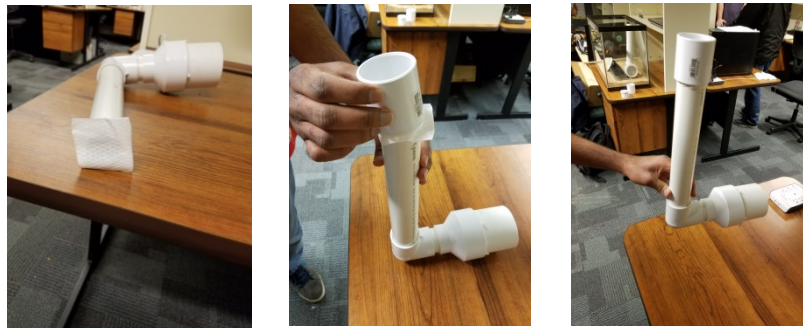
- 6) Attach 4" long 3" diameter PVC to the 3" side of the connector, pinning gauze in between the 4" long 3" diameter PVC and the connector.



- 7) Attach 3" long 1.5" diameter PVC to 1.5" end of connector, then attach 90 degree connector to 3" long piece, then attach 14" long 1.5" diameter PVC to open end of the 90 degree connector.



- 8) Pin 2" x 2" gauze pad in between top of 14" long 1.5" diameter PVC pipe and 1.5" connector.

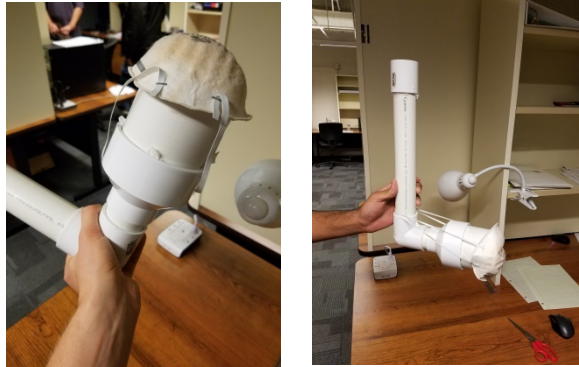


- 9) Repeat steps 5 through 7 to have a total of two PVC pipe apparatuses.
- 10) Set each apparatus in fish tank so that 4" long PVC opening is on the 2 x 4 and facing the near wall of the tank. The 14" long section should be sticking straight up.
- 11) Cut holes in cardboard so the 14" long 1.5" diameter PVC can fit in the tank and poke through the cardboard roof. Adjust positions slightly, as necessary, to make sure holes in cardboard do not overlap. Apparatuses should be spread evenly.
- 12) Cut hole in the middle of the roof for the hair dryer, should be the same diameter as the center of the hair dryer. There should be 3 holes total in the cardboard.



- 13) Attach dust mask to one of the PVC apparatuses at the 4" end so it covers the opening completely and snugly. Wrap rubber bands around 90 degree connector as necessary to

assure a snug fit. Scotch tape may be used as necessary. Make sure there is a good seal between the PVC pipe opening and the dust mask.



14) Put cover on fish tank and attach Velcro.

15) Stick hair dryer in open hole in cardboard so it blows air into the fish tank.

Miscellaneous Notes

- 1) Build time: approximately 1 hour, not including paint drying time, which should be left to dry overnight.
- 2) Other tools needed: scissors or knife to cut holes in cardboard, and gloves.
- 3) Take precautions not to breathe in sawdust when pouring it into the fish tank.
- 4) Two pictures of the finished product are below.



Builder's Guide

Blind Spot Demonstration

This builder's guide is a set of materials and directions to build the demonstration showing workers how bad blind spots are when operating equipment.

Materials

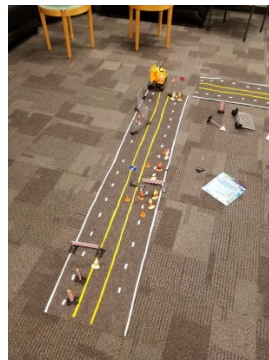
- 1) One toy remote control excavator, approximately 6" x 10" x 10"
- 2) One 2" strip of Velcro tape
- 3) One GoPro Camera with WiFi capabilities
- 4) One smartphone with the GoPro Capture App installed
- 5) One set of roughly 10 toy construction workers, make sure each worker is roughly 3" tall
- 6) One set of toy road work signs, barricades, and cones
- 7) One piece of felt, approximately 6' x 1.5'

Building Steps

- 1) Stick one side of Velcro tape to the top of the cab on the toy excavator and the other side to the bottom of the GoPro.



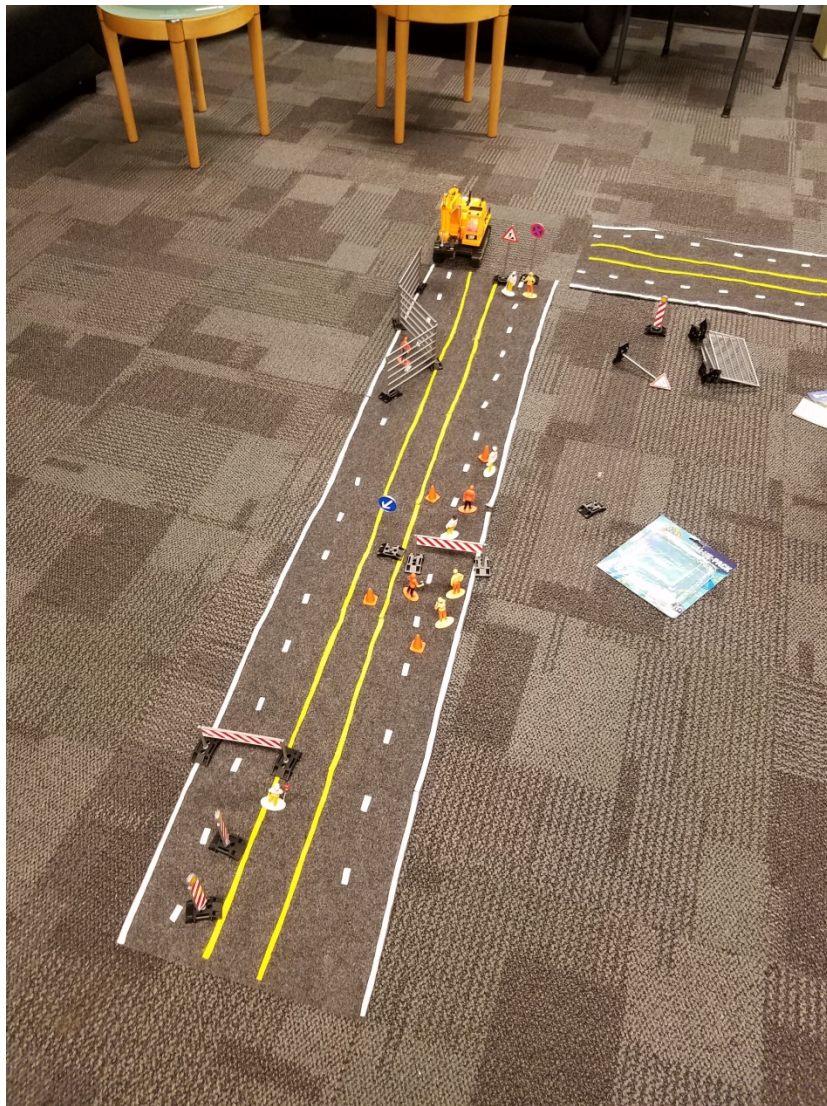
- 2) Lay out felt like a road and set up obstacle course with toy workers and barricades for the excavator to drive through, making sure it is slightly challenging to maneuver excavator, but not impossible. As a guide, make sure openings are 1.5 times the width of the excavator.



- 3) Attach GoPro to Velcro and turn on WiFi on the GoPro.
- 4) Pair smartphone with the GoPro by following instructions on the GoPro Capture App. Downloading the GoPro Capture App might be necessary if not already installed on smartphone.
- 5) Set excavator at start of course, turn it on, and let workers navigate the course using only the screen on the phone.

Miscellaneous Notes

- 1) Build time: less than 30 minutes.
- 2) Make sure driver is facing opposite the course or have them in another room.
 - 3) Obstacle courses are up to the trainer's creativity, an example photo is below.



- 4) Optional: change course from the time the driver sees it in person to when they drive it
- 5) Optional: if felt cannot be obtained, a course can be set on the ground