



SMART KIDS LAB

How clean is the air you breathe? Is swimming water the same as drinking water? How many microbes live in the soil beneath your feet? And what does it all mean? DISCOVER how healthy your neighbourhood is and what you can do to improve it. SMART KIDS LAB lets you examine the water, noise, air, earth and light around you with homemade measuring instruments. On the smartkidslab.nl website, you'll find out how to make the measuring instruments (meters) and how you can GET STARTED.



PARTICULATES!

YOU ARE INVESTIGATING HOW MUCH PARTICULATE MATTER IS IN THE AIR. THESE ARE VERY SMALL PARTICLES FLOATING THROUGH THE SKY. We don't see them, but we breathe them in everyday. Fine particulates! They're bad for our lungs (not so nice). We can measure the particles with our **HOMEMADE PARTICULATES METER**.

By knowing how much PARTICULATE MATTER is in the air, we can choose to take the healthiest cycling or walking route.

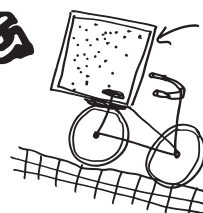
**#FRESH
AIR**

If you wipe a window outside with your hand you'll see a lot of dirt... particulates!

HOW DOES IT WORK?

It all begins with the QUESTION: What do you want to measure? Do you already know? GREAT! Now you can GET GOING.

SMOG



STEP 1.

You start by making the **MEASURING INSTRUMENT**. *What you'll need: [Smart Kids Lab / making meters](#).

STEP 2.

Now it's time to go do **RESEARCH** and experiment. Before you start, think about what you want to investigate in your area and how to go about doing it.

For example, do you want to find out which route you walk or cycle to school is the healthiest? Then place your particulate meters at different points along the different routes you take.

After a day or two, collect all the meters again. Inspect the meters to find out where the most particulate matter is. And then choose a different way!

*What you'll need: The [Smart Kids Lab / experiments](#) worksheet. This explains how to measure the amount of particulate matter in the air with your homemade meter.

STEP 3.

Collect the measurement **DATA** on the Smart Kids Lab worksheet. *What you'll need: the [Smart Kids Lab / experiments](#) worksheet. You can record your measurements here.

STEP 4.

Go grab the **COMPARE-O-METER** so you can compare your measurement data to that of others. You'll also find a lot of interesting information here. *For this you'll need: [Smart Kids Lab / compare-o-meter](#) worksheet.

STEP 5.

Take a picture of your measurement data and put it on the **GREAT DATA MAP**. You can find it at smartkidslab.nl.

*What you'll need: You can take a photo with a phone or digital camera. **THE GREAT DATA MAP** can be found at smartkidslab.nl (in the menu bar).

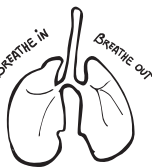
How much
**particulate
matter**
is floating in the air?

SMART KIDS LAB compare-o-meter

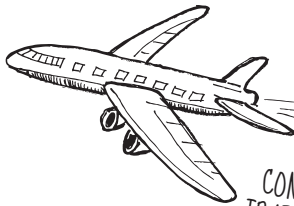


PARTICULATES
are very small and float in the air...
Dangerous **TINY PARTICLES**
that hide out in your **LUNGS!**

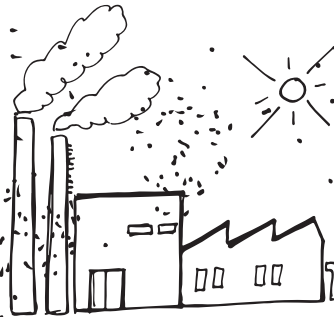
Dirty lungs =
short of breath
NO FUN!



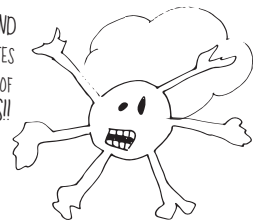
**CONDENSATION
TRAILS** in the air
are water droplets
that form around the
PARTICULATES the
airplane produces!



WAAAY TOO MUCH!

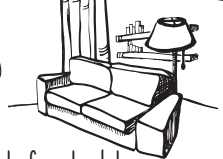


**FACTORIES AND
BUILDING SITES
CAUSE A WHOLE LOT OF
FINE PARTICULATES!!**



BETTER NOT BIKE!

Did you know:



Is there a lot of particulate
matter in your **HOUSE**? **TEDDY
BEARS**, old blankets, carpets
and **PILLOWS** can quickly fill
up with **DUST!** It also makes a
difference which window you open
(the one near the road or the one
near the garden?). But the air inside
is almost always dirtier than outside! So
ventilate well!

STILL A LOT

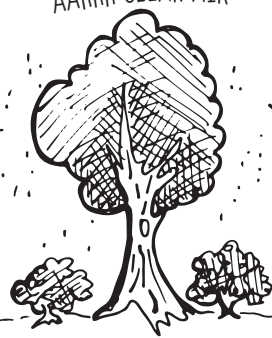


VENTILATION!

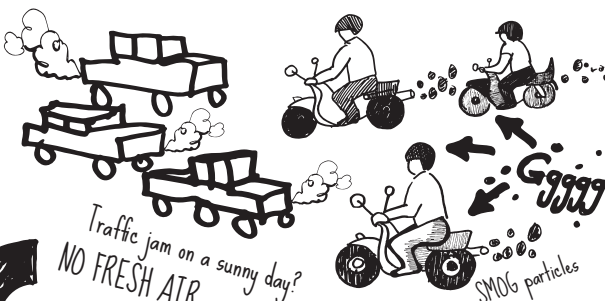
Parks in the rain have very few **FINE PARTICULATES**
AAHHH CLEAN AIR



**CITY
PARK**



JUST A BIT



Traffic jam on a sunny day?
NO FRESH AIR.

TIP



LOOK for open **GREEN CYCLING
ROUTES** running through the city but
not too close to major roads.



**PLAY
OUTSIDE!**

How much particulate matter is floating in the air?

SMART KIDS LAB making meters

DISCOVER HOW HEALTHY YOUR NEIGHBORHOOD IS AND WHAT YOU CAN DO TO IMPROVE IT! We don't see them, but we breathe them in every day: PARTICULATES! If we know where there's a lot of particulate matter in the air, we can protect our lungs by choosing healthier cycling and walking routes.

Make your own PARTICULATES METER: With a milk carton & Vaseline... of course.

WHAT DO YOU NEED?

Empty carton of milk
Vaseline
Double-sided tape
Scissors
Ruler

1.



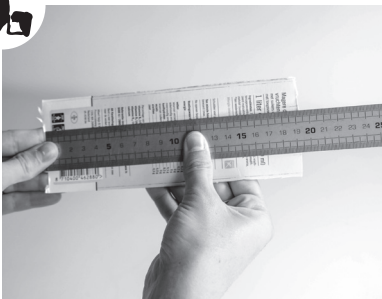
Cut off the top and bottom of the milk carton.

2.



Cut the sides along the folds to make long strips of cardboard.

3.



Measure how long each strip is and cut them each to the same size.

4.



Place a piece of double-sided tape on the printed side of the cardboard.

5.



Smear petroleum jelly (Vaseline) over the entire surface of the blank side.

6.



Carefully remove the protective sheet off the double-sided tape.

7.



Place your particulates meter where you want to take measurements and then wait a few days.

TIP

Measure a BUSY STREET or intersection and a PARK to see the difference. Or even inside if you have a GAS STOVE!

Look how many dark dots appear on your meter. The more dots, the more particulate matter is in the air.



PARTICULATE MATTER



How much

particulate
matter

is floating in the air?

SMART KIDS LAB
experiments

Step 1 Make 3 PARTICULATES METERS and hang them in 3 different places in your neighbourhood (outside on a window, along a bike path, at a busy intersection...)

Step 2 Wait 1 or 2 days (or longer). In the meantime, draw the different places where you have hung your meters below. TIP: At each of your measuring spots, count how many cars, mopeds, vans, trucks, etc. pass in 10 minutes. Which meter do you think will capture the most particulate matter?

Large dashed rectangular box for drawing measuring spots.

Step 4

Take a good look at the tiny dots on the meters. Can you count them or are there too many? Compare the spots with the particulate matter compare-o-meter. Where did you collect the most particulate matter? And why do you think that is?

MY RESEARCH CONCLUSION:

Three horizontal dotted lines for writing conclusions.

Place A:

Step 3

Take your particulates meters from their measuring places and stick them here (cut the cardboard so that it fits). Write down where you measured and how long the particulate matter meter was there.

measurement period: from to

Place B:

Stick a particulates meter here.

measurement period: from to

Place C:

And here too.

measurement period: from to

Step 5

Take a picture of this worksheet & put it on the BIG data map at SMARTKIDSLAB.NL

