



# THE KING'S FOUNDATION

## SCIENCE, TECHNOLOGY, ENGINEERING AND MATHS

### ENGIN-AIR

THESE ACTIVITIES FOLLOW ON FROM THE ENGIN-AIR WORKSHOP THAT YOU HAVE TAKEN PART IN AT DUMFRIES HOUSE STEM CENTRE. USING WHAT YOU LEARNED ABOUT AIR QUALITY CAN YOU REPEAT SOME OF THESE ACTIVITIES AT SCHOOL TO HELP MONITOR POLLUTION?

#### ACTIVITY 1:

##### MEASURE AIR QUALITY BY DOING A LICHEN SURVEY

1. You'll need some trees, a piece of netting 10 squares by 10 squares, a lichen ID guide and the Engin-Air recording sheet.
2. First fill in your hypothesis on your recording sheet, what do you think the air quality is like where you are?
3. Find a large tree with lots of lichen on it, pick the area of the trunk that has the most lichen growing and place your net over the top of it.
4. Count how many squares in your net are more than half full of clean air bio-indicators such as *usnea*, *evernia* and *hypogymnia*, only count a square if it is more than half full of the lichen.
5. Count how many squares in your net are more than half full of polluted air bio-indicators such as *xanthoria* and *physcia*.
6. Count how many squares in your net are more than half full of any lichen.
7. Note your results in your recording sheet.
8. Repeat steps 3-7 at least three times, in science the more times you repeat an experiment or investigation the more reliable your results will be.
9. Now based on the results you found how accurate was your hypothesis, note this in your conclusion and write down any interesting results.

TAKE SOME TIME TO GET USED TO THE DIFFERENT SPECIES OF LICHEN. *USNEA* AND *EVERNIA* ARE LARGE AND FLUFFY AND ONLY ATTACH TO THE TREE AT ONE POINT. *XANTHORIA* IS BRIGHT YELLOW AND *PHYSCIA* IS REALLY, REALLY TINY! USE THE LICHEN ID GUIDE TO SPOT THE DIFFERENCES

#### ACTIVITY 2:

##### BECOME A SCHOOL CAMPAIGNER

1. Investigate the Good life Goals <https://sdghub.com/goodlifegoals/> particularly goal 13 "Climate Action". These goals relate to the sustainable development goals and how individuals like you can help world leaders achieve them through your actions.
2. Present the results of your air quality survey to the school, family or friends and encourage them to take action using the good life goals.



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## SCIENCE, TECHNOLOGY, ENGINEERING AND MATHS USEFUL RESOURCES

### SCOTTISH AIR QUALITY:

[www.scottishairquality.scot/](http://www.scottishairquality.scot/)

CHECK OUT THE AIR QUALITY FORECAST FOR SCOTLAND OVER THE COMING DAYS, ARE THERE ANY POLLUTION HOTSPOTS? CAN YOU FIGURE OUT WHAT MIGHT BE CAUSING THEM?

### NASA CLIMATE CHANGE FOR KIDS:

[www.climatekids.nasa.gov/kids-guide-to-climate-change/](http://www.climatekids.nasa.gov/kids-guide-to-climate-change/)

FIND OUT MORE ABOUT THE DIFFERENCES BETWEEN CLIMATE AND WEATHER AND HOW THIS AFFECTS PEOPLE AROUND THE WORLD.

### MORE SURVEYING TECHNIQUES:

[www.rgs.org/schools/teaching-resources/human-impact-studies/](http://www.rgs.org/schools/teaching-resources/human-impact-studies/)

TRY SOME OTHER WAYS OF MONITORING AIR QUALITY INCLUDING CATCHING PARTICULATE MATTER AND DUST WITH STICKY TAPE.

