



## „What pollutes the air” - lesson plan

Duration	1 hour
Age	6 - 9
Type of classes	didactic and educational activities
Goals	<ul style="list-style-type: none"> <li>• To acquaint children with the general subjects related to air - the phenomenon of spreading, the phenomenon of breathing and the importance of these phenomena for a human being,</li> <li>• To familiarize children with the basics of the problem of air pollution and the prevalence of its occurrence, also in rural areas,</li> <li>• To acquaint children with the causes of poor air quality and the harmfulness of burning coal and wood,</li> <li>• To acquaint children with the principles of proper waste segregation and to consolidate knowledge about the harmfulness of their combustion in domestic heating devices,</li> </ul>
Methods	Show, talk, film screening, brainstorming, didactic games
Forms of work	Individual, collective
Needed material	<ul style="list-style-type: none"> <li>• Air freshner / perfumes,</li> <li>• fan (optional),</li> <li>• empty plastic bottle with a screw cap,</li> <li>• a large glass bowl with a flat bottom and a glass lid,</li> <li>• figurines of cars, houses with chimneys, people, animals, trees,</li> <li>• spiral for mosquitoes / incense,</li> <li>• printed card with refill,</li> <li>• a printed card with trash bins for coloring,</li> <li>• cardboard box,</li> <li>• garbage (various types),</li> <li>• shawl (optional).</li> </ul>

Attention: During the lesson, it is worth using the dedicated presentation available to download from the "Clean Air" website.

The presentation consists of slides related to topics discussed during the lesson. The teacher after completing each exercise can use a slide (or slides) summarizing the given issue, to remind the most important information and to systematize the knowledge of students. The presentation also includes slides with exercises and the answers to them.

### 1. What is the air?



- a) The teacher, after presenting the subject of the lesson: the causes of air pollution (slide 1), asks children to plug their mouth and nose for a moment (Be careful! There are children who might want to show that they can stand without air for very long - you can not allow this!) . The teacher asks if we feel good when our nose and mouth are blocked and when we lack air. The children answer that no, and the teacher emphasizes that **the air is very important to us - necessary to live.**
- b) The teacher asks the children where exactly the air is. As part of the show, he pulls out a fully capped and completely emptied plastic bottle and asks the children if they think something is inside of it. Children answer and the teacher helps in finding the right answer. S/he asks several students to try to crush the bottle. S/he asks why it is impossible. It helps the children to come to the conclusion that **the air is all around us**, also in a bottle that seems to be empty. That's why we can not crush it.
- c) The teacher asks the children if the air has a smell - the children answer. The teacher explains to the students that yes - the air can carry fragrances. As part of the show, s/he turns on the fan and punches with perfumes / air freshener, or asks the children to "hand" the fragrance - to the children sitting next and asks the last one if he smells. The teacher emphasizes that apart from the smells, **unfortunately, the air can also carry various pollutants that are dangerous to our health.**
- d) The teacher asks the children if the air has a color and whether it is visible – they will find out in the next exercise.

Then, the teacher shows slide 2 and 3 from the presentation - for summarizing the knowledge they have gained.

## 2. What is smog? - air pollution in rural areas

- a) The teacher gives children figurines in the shape of houses with chimneys, cars, trees, people, etc. Then s/he asks the children to build their own place from the figurines they have received. The children put the figurines in the bowl one by one, arranging them. The teacher also indicates that children pay attention to the chimneys of houses, industrial plants, cars, agricultural machinery and asks if they know what can be extracted from them. It guides children to talk about the smoke from the chimneys and exhaust pipes and then teacher asks them to think about how the area changes by such an emission.

ATTENTION: With older children, we omit the element of joint laying of the city from figurines - it is enough to put one house, a car and a man in the bowl and perform the experiment right away

- b) The teacher puts a spiral against mosquitoes or another smoking object in the bowl and announces to the children that they will soon learn how the area can change when all the chimneys start smoking, and exhaust fumes from the exhaust pipes of the cars come out.
- c) Then he kindles a spiral (a flame will appear, which should be extinguished - only smoke can remain) and covers the bowl.

ATTENTION: Before choosing a smoking item (eg a mosquito spiral), make sure that its ingredients are not toxic to children.



ATTENTION: Be very careful and safe - do not leave matches / lighters within the reach of children and limit their direct access to the smoke bowl.

- d) The teacher asks the children to look at the bowl and ask questions:
- What's in the bowl now, in our village? (Air pollution, smog, smoke, dust)
  - How has our town changed because of what happened? (It is smoky, everything is less visible)
  - Why did this happen? (Chimneys of houses and cars started to smoke, which caused strong air pollution)
  - When the chimneys most often smoke - what time of the year, when is the biggest air pollution and why? (In winter, because people use boilers since they are cold)
  - How does the man who is inside the bowl feel? (Very bad, it's hard for him to breathe, he inhales harmful substances)
  - What are the biggest problems in our village: cars, factories or chimneys of houses? (In the rural area, the main problem is low-stack emission - fumes from domestic chimneys).
- e) The teacher picks up the cover for a very short while and asks the children if they smell something. Again, s/he emphasizes that in addition to the unpleasant smell, in the polluted air there is also a lot of compounds harmful to the human health, which we inhale with the air.

After this exercise, the teacher shows slide 4 and 5 from the presentation - for summarizing the knowledge they have gained.

### 3. Film screening

- a) The teacher announces to the children that they will watch the video from which they will learn more about air pollution. S/he encourages children to listen carefully because after the film they will have to decipher the puzzle prepared on its basis.
- b) The teacher displays a short, five-minute film from slide 6:  
[https://www.youtube.com/watch?v=pq7-L4b6Ak4&list=PLFEhj9ha-BHY-xJLBZZIPvHZanmXW0MO &index=4](https://www.youtube.com/watch?v=pq7-L4b6Ak4&list=PLFEhj9ha-BHY-xJLBZZIPvHZanmXW0MO&index=4)

### 4. What pollutes the air? - puzzle

- a) The teacher places in a prominent place, for example on a blackboard, a board with drawings (along with the captions) appearing in the puzzle and explains the meaning of individual drawings. Then s/he gives the children a page with a puzzle and/or displays it on the presentation (slides 7-13)



### **Variant A – Role division**

The teacher randomly selects children from the class and assigns them individual roles in accordance with the pictures from the board. The teacher (or other child) plays the role of a reader and reads the written text. Students join the text they read by saying the name of the previously indicated picture. In this way, they read the text related to the subject of air pollution together.

### **Variant B – Common reading of the text**

The teacher introduces students to the way the encrypted text is read. The teacher acts as a narrator, and the whole class, on the teacher's signal, tries to read the content of the encrypted message together. The teacher indicates on the board a given symbol when it appears in the content.

NOTE: For younger children (not able to read), you can reduce the number of symbols and choose the ones that are unambiguous (eg car, house, heart)

### **Variant C – Division into parts**

The teacher divides the text into 4 sections and entrusts 4 students with reading the encrypted message. Each of them reads the fragment indicated by the teacher.

Then the pictures can be colored.

After this exercise, the teacher shows slides 14-17 explaining to children the main causes of air pollution. The teacher emphasizes that in rural areas it is mainly low stack emissions from household stoves, boilers and fireplaces - picture 1.

## **5. Example of good behavior - we segregate waste**

- a) The teacher introduces children to the subject by asking questions:
  - Can you burn waste? (No!)
  - If not, why? (Because they contain very dangerous chemicals during their combustion we harm our health)
  - So what should we do with waste? (Segregate)
  - What happens to segregated waste? (You can use them again, give them a second life)
  - Is it worth segregating waste? (Yes!)
  
- b) Then the teacher asks the children if they know what color of the bins means what. If necessary, s/he presents this division and instructs students to color the printed waste bins in appropriate colors.
  
- c) The teacher presents the rules of play to the children. S/he asks for a few volunteers and s/he covers their eyes. Children without looking at each other draw from the box of waste, guess the



shape and the name of the object and decide which bin should be thrown. The whole class assesses whether the student has done his job well.

ATTENTION: In the case of very small or fearsome children, the exercise should be carried out without covering the eyes, with the same segregation.

ATTENTION: Exercise can also be done in a different version: with the division of randomly drawn items into those that can be burned in the furnace and for those that are not allowed. For example: a dry piece of wood, cardboard, pellets - you can burn; plastic bottles, wet wood (still with leaves), colored newspapers - you can not burn.

After this exercise, the teacher shows slide 18 and 19 from the presentation - for summarizing the knowledge they have gained.

The teacher completes the lesson by showing slide 20.

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