

ACTIVITY FOUR: WHERE DOES OUR DRINKING WATER COME FROM?

This **NATURAL SCIENCES** lesson looks at a water catchment. Learners consider some positive environmental action taking to help our precious water catchments and then trace the path of water, starting from their taps (or water tanks) at school or home, back to the source.

RIVER CATCHMENTS

The river catchment, or drainage basin, is all the land from mountain top to seashore, drained by a single river and its tributaries.

Catchment areas vary greatly in size – a big river may have a catchment area of several thousand square kilometres, whereas a smaller tributary will have a catchment area of only a few hectares. Catchments are separated from one another by watersheds.

Waterbodies in southern Africa suffer from many problems – all of which are linked to the way in which the catchment area of each is used. Catchment conservation should include the protection of wetlands and sound conservation practices on agricultural and forestry lands (such as all ploughing and planting should be on the contours, river-bank vegetation should not be disturbed, and there should be the prevention of water pollution from industry, agriculture or informal settlements).

ACTIVITY:

People are realising that we must protect our precious rivers and streams and many folk across South Africa have started 'adopt a river' projects. As a class or in groups discuss the positive action plans that you can see in the river catchment below:



For the teacher: Some of the positive action projects in the water catchment are:

1. Organising litter clean-ups
2. Recycling waste
3. Removing alien invasive plants
4. Replanting river banks
5. Keeping strips of wetland between the river and the gardens
6. Fixing dongas
7. Repairing damaged wetlands
8. Fencing and protecting springs
9. Building houses and toilets well away from river banks
10. Keeping farm animals away from river banks

ACTIVITY (GROUPWORK OR INDIVIDUALLY):

1. Using your own personal observations, the picture on the previous page and the comic strips at the end of this activity, trace the water we drink everyday from our taps or water tanks, back to the source.
2. Your information must be in the form of a flow-chart.
3. Make notes, on your flow-chart, of where possible contamination of the water takes place.

AS A CLASS:

1. Discuss the journey of water from our taps, back to the source. Teacher, use all the information from the different groups to draw a comprehensive flow-chart on the chalk board.
2. Where did learners feel contamination could take place? Discuss this, putting all the possible contamination points on the flow-chart.
3. What environmental action could be taken to address these issues?

Criteria to assess learners during this natural sciences lesson

Criteria	Exceeded requirements of the Learning Outcome	Satisfied requirements of the Learning Outcome	Partially satisfied requirements of the Learning Outcome	Not satisfied requirements of the Learning Outcome
The learner took part in the discussion around the positive environmental actions they could see happening in the catchment				
The learner used a flow-chart and traced the journey of water from where it is drunk to its source				
The learner contributed to discussions on how water could be contaminated between where it is drunk and the source				
The learner contributed ideas of what one could do to address the contamination of water				

HOW IS TAP WATER CLEANED?

1

I have travelled along many rivers to get to the Vaal Dam.

Along the way I have picked up many 'passengers' that make me dirty. I am now in a canal travelling to a water purification station to be cleaned.

"PASSENGERS":

- large living organisms (fish, crabs, floating plants)
- sticks, leaves & litter
- sand, soil & clay particles
- small living organisms (insects, algae, plankton)
- germs (viruses & bacteria)
- 'bad guys' (pesticides, fuel, mercury, arsenic etc.)

2

When I arrive at the station I pass through screens that trap large living organisms, sticks, leaves & litter.

3

I flow into a spiral tank where chemicals are added. I move at high speed, which mixes the chemicals in the water. All the sand, soil and clay particles, as well as some small living organisms, germs, and all the 'bad guys' stick to the chemicals to form 'clumps'.

As I begin to slow down these 'clumps' join together to form 'floc'.

4

I then flow into a large tank where I slow down even more to allow the 'floc' to settle to the bottom. This forms 'sludge'. This 'sludge' will later be sucked out of the tank. I feel much cleaner and lighter, but I'm feeling a bit weak!

5

Ooh this is ticklish! I have flowed over a weir and into another tank where carbon dioxide is bubbled into me. I am feeling much better!

6

Almost clean! As I pass through a sand filter the last stubborn small living organisms and some germs are removed. Hey this doesn't hurt at all!

7

Wow, this feels good! I'm now being mixed with chlorine gas, which kills all the remaining germs. I am sparkling clean. Clean enough to drink!

8

I have now been pumped to a reservoir. What a cool place! So many friends! From here I get piped to houses, schools, businesses and factories. I'm really proud to be tap water. Please remember to use me wisely!

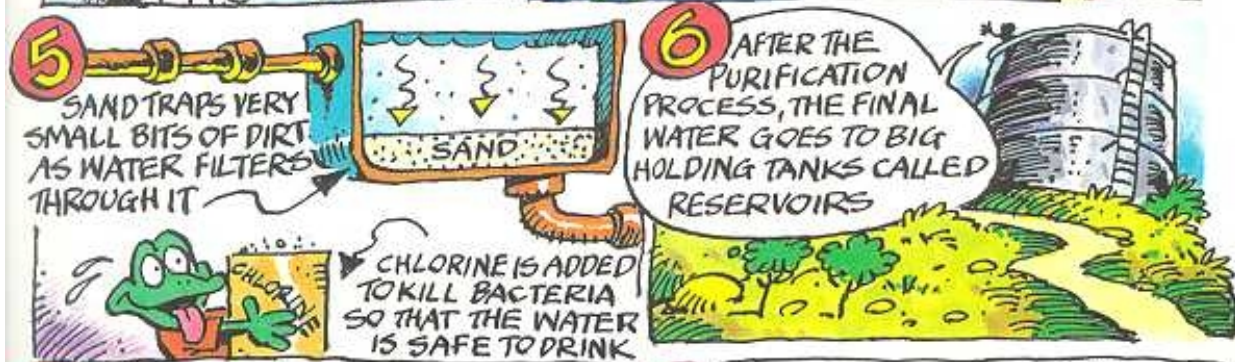
Water Wise

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For more information about the Water Wise Education Programme, please contact Rand Water on (011) 682-0773 or www.randwater.co.za

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LWAZI ASKS- / WHERE DO WE GET OUR DRINKING WATER FROM?



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