

## The exposing of the river Chemnitz

Since one year our river is exposed near the so called “Falkeplatz”, a place near the centre of our town. There will be built a 3.5 hectare large park with cycle ways, benches and more trees, it should be something like a modern entrance to our town.

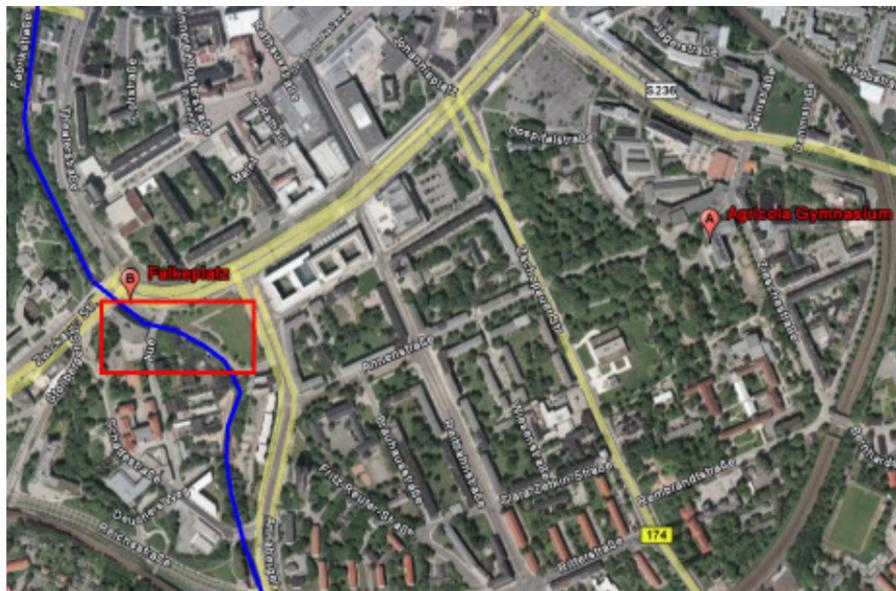
It will become a nice place in the middle of the town to chill out or meet with friends. And the best fact is, that it isn't far away from our school.

Another important aspect of this exposing is the enhance of flood control. But the main reason is to bring more nature into the town.

The project near “Falkeplatz” should be finished in October 2009.

Till now over 3 Million euros flow into this project.

Some other project around the river and other places of the town will be finished in 2012.



Picture I: *Chemnitz river, (A) our school, (B) Falkeplatz, the red square is the rough the area of exposing*



Picture II: *Area around Falkeplatz while the construction work*

## General facts

The Chemnitz is our most important river and gave our city the name, the name comes from the sorbic word “*Kamenitza*”, which means: stone river.

The river comes from the south and flows to the north.

It springs from the river “Zwönitz” and the “Würschnitz”. From that the river runs for 75 km to the north where it runs into the “Zwickauer Mulde”.

The Chemnitz starts at 313 m a.s.l. and ends at 168 m a.s.l.



Picture III: *The river Chemnitz and its most important lateral branches*

## Characterisation of our location

Location: City park in Altchemnitz



Picture IV: Bridge over the Chemnitz



Picture V: Idyllic river side

Date: 19-10-2009  
Time: 9.30 am till 1.00 pm  
Weather: - cloudless  
 - sunny  
 - hardly wind  
Temperature: - air: 20 °C  
 - water: 14 °C



Picture VI and VII: We at work

## Little swimmers show us the quality of Chemnitz' water

### Self-purification:

A lot of micro-organisms, which lives on human pollutants are cleaning the water because they use this pollutants to live. If they have good conditions they will increase, that is called self-purification.

### Biological Indicator:

It shows us the quality of the water. Some special organisms only exist in high quality water. The number of indicator organisms explains which kind of water it is. If the water for example has got many leeches it is a clean one, because they are a sign for high quality.

### Saprobienindex:

Every species got it's own data, you can get it, if you multiply the frequency, the indicator value and the indicator weight.

	Self-purification	Biological Indicator	Saprobienindex
value	---	<b>2.1</b>	<b>2.45</b>
quality	<b>good</b>	<b>good</b>	<b>good</b>

Table I: Our measurements



Picture VIII: Catching the little swimmers



Picture IX: Our catching-box with leeches, caddie-fly-larvas and some little fishes

## Phosphates:

Two third of the phosphates come from domestic and industrial sewage the remaining part from the agriculture. Phosphates are plant nutrients which with raising concentrations leads to a reinforced algae growing, this leads to a deterioration of the water quality.

## pH-factor:

The pH-factor is a unit of measurement of the neutral, acid or alkaline reaction of a solution. The natural pH-factor of water is between 6.5 and 8.5. A natural increased pH-factor can be found in lime-rich streams.

If the pH-factor is below 5.5 the biological self-cleaning-process will be disabled, Water organisms need a pH-factor between 6 and 8, over a pH-factor of 9 and und a factor of 5.5 life is nearly impossible.

## Nitrogen connections:

Excretions of living organisms are containing nitrogen-connections, which are mostly ammonium-species.

These will be dismantled by micro-organisms, from ammonium over nitrite to nitrate. The end product is a essential part for plant growing. This process can be also named as oxidation from ammonium to nitrate.

For the nitrogen oxidation you need a huge amount of oxygen, which is eliminated out of the water, because of that the oxygen assay in the water will be decreased to the minimum and most of living organisms in this part of the river/pond/sea etc. will die.

	pH-factor	phosphate / mg/l	chloride / mg/l	ammonium / mg/l	nitrite / mg/l	nitrate / mg/l
value	<b>6.3</b>	<b>0.42</b>	<b>28</b>	<b>0.06</b>	<b>0.07</b>	<b>7.5</b>
quality	<b>good</b>	<b>moderately</b>	<b>very good</b>	<b>good</b>	<b>good</b>	<b>good</b>

Table II: Water data

We examined the river of our hometown *Chemnitz*, we took tests of different chemical substances and biological factors. The final result told us, that the quality of the water is good.



Picture X: Our "environmental suitcase" for testing pH-factor, amount of nitrate and others

## Fishways

Along our river there are many "fish-stairs". Fishes use them to cross bigger height –differences within the rivers course.

They can jump on little stairs and can make a stop on each level to rest there until they will go on to an upper stage.

But why does fishes want to swim into higher river regions?

The fishes can spawn better in upper river parts, because of different terms of the environmental surrounding, for example food.

It is exiting how much energy such a fish can release.

The positive site effect of this Fishways is, that the water can clean up it's self and get more oxygen. But a negative aspect is, that bigger birds can catch the fishes more easily in the flat areas.

The alternative to the stone-Fishways are Stairs which are built out of grass and steady rises.

With this also smaller fishes can overcome the height-differences. Our Chemnitz has this better variant too.



Picture XI: Fish-stairs in the Chemnitz – 1

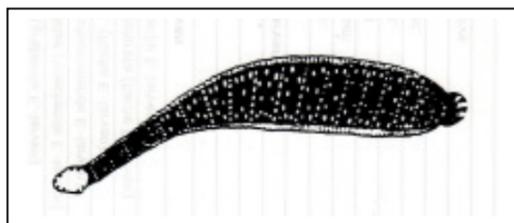


Picture XI: Fish-stairs in the Chemnitz - 2

## Identified aquatic animals in the river Chemnitz

### 1 Leech:

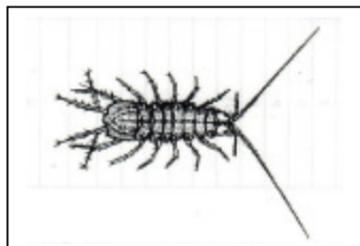
- colour: brown, yellow dots
- length: up to 6 cm



Picture XIII: Leech

### 2 Waterlouse:

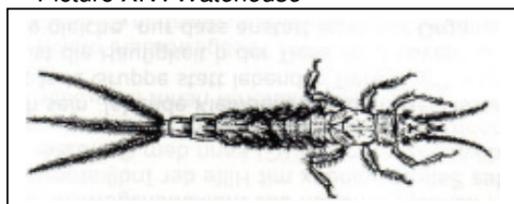
- colour: grey, brown, red, bright dots
- length: ? - 8 mm / ? - 12 mm



Picture XIV: Waterlouse

### 3 Mayfly-larva:

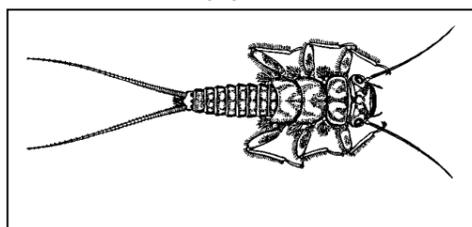
- colour: yellow, brown
- length: 10 – 12 mm



Picture XV: Mayfly-larva

### 4 Stonefly-larva:

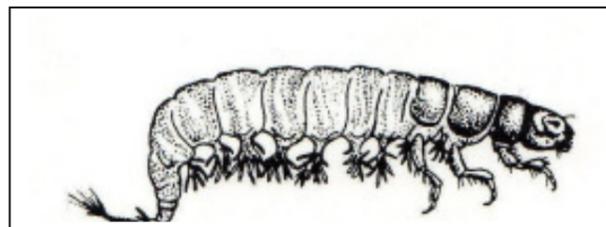
- colour: brown, yellow, black
- length: 16 – 21 mm



Picture XVI: Stonefly-larva

### 5 Caddies fly-larva:

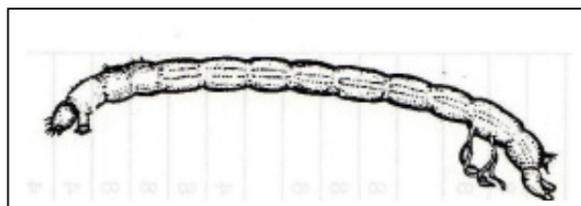
- colour: brown, grey, black
- length: 3 – 4 mm



Picture XVII: Caddies fly-larva

### 6 Mosquito-larva:

- colour: orange-brown
- length: 1 – 20 mm



Picture XVIII: Mosquito-larva

## General fact

- width: 5m
- depth: 60cm
- flow capacity: 4.2 km/h (1.167m/s)
- soil conditions: sand, some algae
- use: recreations area



Picture XIX: Measuring the flow capacity by a swimming volleyball



Picture XX: Measuring the width of the river



Picture XXI: catching some aquatic animals

### **First tests:**

- **smell:** earthy, very weak
- **turbidity:** none
- **colour:** colourless

➔ **the water of the river is clean**