



Chemische und mikrobiologische  
Untersuchungen

- Trinkwasser, Badewasser
  - Brunnen, Oberflächenwasser
  - Abwasser, Klärschlamm und Abfall
  - Boden, Deponien und Altlasten
  - Außenluft, Innenraumluft
  - Arbeitsplatzmessungen (MAK / TRK)
- Steinstraße 10  
35457 Lollar

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Client:

Tested Device: REDOzone™ Sterilisator RZ380MG

**TEST of "REDOzone™ Sterilisator RZ380MG" in regard to eliminating certain hormones in drinking water.**

## INTRODUCTION

Since a relatively long time hormones are used in stock farming to further faster growth of animals.

In many countries – also in Germany – this use of hormones is illegal.

Still – a complete surveillance of the meat production and a complete control of these illegal substances is impossible; meats find their way to the consumer where the animals have been treated with illegal hormones (i.e. hormones that are not produced by the animal itself).

These added hormones seem to be the cause of a great number of health risks from allergic reactions to being the cause of cancer.

**In this table you find certain hormones and their concentration in different animals:**

Animal	Progesterone	Testosterone	17 $\beta$ - Oestradiol	Oestrogen
Boar	0.35 – 0.76	0.18 – 20.34	0.12 – 24.36	0.01 – 55.2
Eunuch Pig	-	0.00 – 0.37	0.00 – 0.73	0.00 – 0.28
Sow	0.01 – 1.76	0.00 – 0.49	0.00 – 0.91	0.00 – 0.20
Chicken	0.24	<0.004 – 0.030	<0.004 – 0.020	<0.02
Turkey	8.18	<0.004 – 0.023	<0.004 – 0.004	<0.02
Goose-fat	31.85	<0.002	0.73	0.51

Figures in ug per kg/average numbers

The "REDOzone™ Sterilisator RZ380MG" produces a gaseous mixture from air that contains ozone. Ozone itself is supposed to not only reduce or eliminate organic and microbial hazards but also eliminate or reduce hormones in a liquid medium.

Our tests will quantify the effect of REDOzone in regard to eliminating or reducing three (3) different commonly found hormones:

- 17  $\beta$  Oestradiol
- Testosterone
- Progesterone

**Description of Test Method:**

First a solution of the three different hormones

17  $\beta$  Oestradiol

Testosterone

Progesterone

was created.

Then we added 1 litre water to the above mentioned solutions thus creating three different liquid solutions with the same content of contamination. One of these three solutions was regarded as the reference solution against which the two other same liquid solutions were tested. The gas - chromatic testing results for the reference solution are shown in the following table - after extraction and revitalisation -.

**TEST RESULT FOR THE REFERENCE SOLUTION IN REGARD TO HORMONES CONTAMINATION**

Hormone	Concentration	Unit
17 $\beta$ Oestradiol	0.78	$\mu\text{g/l}$
Testosterone	0.81	$\mu\text{g/l}$
Progesterone	0.34	$\mu\text{g/l}$

We treated one of the two other liquid solutions 15 minutes with "REDOzone<sup>TM</sup> Sterilisator RZ380MG" respectively 30 minutes in the following way: We led the ozone / gas mixture from the unit into a 1 litre water bottle, than extracted the hormones from the liquid revitalised them and analysed them gas - chromatically.

The results are shown in the following table:

**TEST RESULTS OF THE HORMON CONCENTRATION AFTER 15 MINUTES TREATMENT with "REDOzone<sup>TM</sup> Sterilisator RZ380MG"**

Hormone	Concentration	Unit
17 $\beta$ Oestradiol	0.003	$\mu\text{g/l}$
Testosterone	0.046	$\mu\text{g/l}$
Progesterone	0.056	$\mu\text{g/l}$

From the table above one can clearly see that the hormone "17 $\beta$  Oestradiol" is completely eliminated – besides trace elements - even after only 15 minutes treatment with "REDOzone™ Sterilisateur RZ380MG"

Also the other two tested hormones were strongly reduced if comparing it with the reference solution.

**TEST RESULTS OF THE HORMON CONCENTRATION  
AFTER 30 MINUTES TREATMENT with "REDOzone™ Sterilisateur RZ380MG"**

Hormone	Concentration	Unit
17 $\beta$ Oestradiol	0.003	$\mu\text{g/l}$
Testosterone	<0.02	$\mu\text{g/l}$
Progesterone	<0.02	$\mu\text{g/l}$

After a 30 minutes treatment with "REDOzone™ Sterilisateur RZ380MG" the tests show that all three tested hormones were completely eliminated – besides trace elements – or in such small concentrations that they could not be found any more.

The following table shows the decrease in hormone contamination in regard to treatment time.

**DECREASE OF HORMONES IN % in RELATION TO TREATMENT TIME WITH  
"REDOzone™ Sterilisateur RZ380MG"**

Hormone	Concentration at begin of test	Decrease After 15 minutes	Decrease After 30 minutes
17 $\beta$ Oestradiol	100%	-99.6%	-99.6%
Testosterone	100%	-94.3%	> -97.5%
Progesterone	100%	-83.5%	> -94.1%

**Summarizing Assessment:**

The tests clearly show that hormones in a liquid medium can be substantially reduced by "REDOzone™ Sterilisator RZ380MG".


17 β – Oestradiol was already after 15 minutes treatment reduced to trace elements.

Testosteron and Progesteron after only 15 minutes treatment was eliminated by 94.3 % respectively 83.5 %. After a 30 minutes treatment they was reduced by 97.5 % respectively 94.1%.

We can testify that "REDOzone™ Sterilisator RZ380MG" has an excellent record in eliminating respectively reducing hormone contents; this demonstrated with the three (3) named hormones.



Dr. J. Prucha



Dr. K. Schöpke