# THE ZOO OF THE CITY OF ANTWERP
# REPORT OF CHRISAL
# USE IN THE Z00 TOUCH POOL


ANTWERP ZOO STUDY TEST REPORT

**THE PROBLEM:**

The Antwerp Zoo has a the water equivalent of the “Petting Zoos” found in many fairs and animal exhibits, but this is where fish can be handles and is called the Zoo’s TOUCH POOL.

Of course, with so many people, mostly children putting their hands into the pool’s water and touching the fish, a great deal of contamination is introduced with all the probably resulting problems.

**THE TESTING OF CHRISAL AS A SOLUTION:**

During several months, the “Touch Pool” in the Zoo of Antwerp was treated with Chrisal PIP Pond Plus. As described in the name, the visitors to the Zoo can touch the fish in this pond which normally leads to injuries to the population of fish in the pool. As a consequence of all these outside intrusions of dirty hands, the fish in this pond have quite often received a variety of damage to the mucus layer and have taken ill with a number of associated infections.

To properly test the extent of the situation and the difference with then using Chrisal, samples taken in the Touch Pool before and after Chrisal use and were analyzed for:

1) Total count: general view of the microflora.
2) Enterobacteriaceae: an indicator of hygiene.
3) Aeromonas hydrophila: an indicator of the pathogen load.

## THE TEST RESULTS OF THE WATER BEFORE CHRISAL USE:

**Results sampling 26/03/09**

| Sample | Total count (CFU/ml) | Enterobacteriaceae (CFU/ml) | Aeromonas (CFU/ml) |
|---|---|---|---|
| 1) Water | TNTC | 1780 | 1800 |
| 2) Filter | TNTC | 540 | 1020 |

*TNTC: Too numerous to count

The results of the first sampling on total count (just before the start of treatment with PIP Pond Plus) show a very varied and unstable microflora.

This combined with a high number of Aeromonas and Enterobacteriaceae creates a heavy loaded negative environment for the fish. This environment and because of the circumstances (frequent damage to the mucus layer) has caused a high risk of infections for the fish.

Once the Touch Pool had been tested with the system that has been normally used to try and protect the fish, Chrisal' Probiotic PIP Pond Plus was then put into the pool.

The expectation with using Chrisal is because the history of the use of PIP Pond Plus shows a stable microflora will develop to protect the pool and fish and result in a relatively low quantity of pathogens once Chrisal use has been established.

## THE TEST RESULTS OF THE WATER AFTER CHRISAL USE:

**Results sampling 28/04/09**

| Sample | Total count (CFU/ml) | Enterobacteriaceae (CFU/ml) | Aeromonas (CFU/ml) |
|---|---|---|---|
| 1) Water | TNTC | 100 | 140 |
| 2) Filter | TNTC | 100 | 100 |

*TNTC: Too numerous to count

**CONCLUSION OF CHRISAL USE BY THE ZOO**

As can be readily seen, the results of the second sampling, after using PIP Pond Plus for 1 month, show a clear and very large improvement of the micro flora and so in the condition and health of the Antwerp Zoo's Touching Pool and fish.

The situation at the start of the test showed an unstable micro flora with a high number of pathogens.

However, just after 1 month of the use of Chrisal PIP Probiotic Pond Plus, the Zoo Touch Pond has evolved to having a stable micro flora with a low number of pathogens. Both the organic pressure and the risk of infections were strongly reduced.

Also note that the Total Count remains high, but now is comprised mostly of Chrisal's beneficial and protective probiotics.

Therefore, it already can be demonstrated that, after only one month of using the Chrisal PIP Pond Plus, it can be stated and readily seen that the desired result of a healthy and safe Touching Pool has been achieved despite the large volume of public participation and continuous outside contamination introduced into the pool.

CHRISAL

Chrisal CLEANING PRODUCTS