

FINAL REPORT
**Evaluation of Toxicology Information
Regarding HeatSavr**

SUBMITTED TO:
C/O DAVID KATZOV
FLEXIBLE SOLUTIONS LTD.,
2614 Queenswood Dr.
Canada, Victoria, BC V8N 1X5
Canada



August 15, 2002

SUBMITTED BY:
The Toxicology Group, LLC
A Wholly Owned Company of NSF International
Ann Arbor, Michigan

TABLE OF CONTENT

1.0	INTRODUCTION.....	1
2.0	DISCUSSION.....	1
3.0	CONCLUSION.....	2

SIGNATURE PAGE

Statement of Data Confidentiality

This document is proprietary to Flexible Solutions Ltd. and is considered by Flexible Solutions Ltd. to be confidential in all countries and for all purposes including, but not limited to, those enunciated. Information contained in this report should not be reviewed, abstracted, or used by persons other than those designated by Flexible Solutions Ltd. without the Corporation's express written consent. The Toxicology Group, LLC does not claim that any portion of the document is either proprietary to or contains the confidential information of The Toxicology Group, LLC. The Toxicology Group, LLC places no restrictions on the dissemination of this document.

Company: Flexible Solutions Ltd.

Company Agent: _____

Title: _____

Signature: _____ Date: _____

Quality Assurance Statement:

This report was prepared and reviewed by qualified scientists with experience in human-health risk assessment, and the document was specifically audited for data consistency and quality. Documents of this type are not required to meet Good Laboratory Practice Standards as established by the U.S. Environmental Protection Agency (40 CFR, Part 160) and OECD.

Prepared by: Teri Bagnell-Leonardo, Ph.D.

Teri Bagnell-Leonardo Date: 8/15/02
Project Manager

QA Reviewer: Chris Steele, M.S.
Chris Steele Date: 8/15/02
Senior Scientist

Director: Lori L. Bestervelt, Ph.D.
Lori L. Bestervelt Date: 8/15/02
Project Director



1.0 INTRODUCTION

This report is to assess the completeness of the toxicological data provided from Flexible Solutions regarding the HeatSavr product. HeatSavr is designed to decrease evaporation of water from swimming pools to decrease water usage and provide energy efficiency.

2.0 DISCUSSION

Two factors are important in evaluating the safety of HeatSavr used in public swimming pools. The first is to evaluate the effects HeatSavr may have on the disinfection chemicals in swimming pools. The second involves evaluating the toxicological effects HeatSavr may have on individuals (adult and children) swimming within the pool. Based on information provided by Flexible Solutions, Ltd the typical use patterns do not present a potential for chronic exposures and therefore the safety review has been confined to the potential for acute (< 4 hours) exposures only.

In the independent study performed by Aqua Science (study provided by Flexible Solutions) results showed that HeatSavr did not interfere with water sanitizing parameters. This study was well designed, they took multiple samples over several weeks and measured critical water and sanitizing chemical parameters regarding the effect HeatSavr has on pool sanitizing chemicals.

To evaluate the toxicological effects HeatSavr may have on individuals exposed during swimming pool use, studies were performed by accredited laboratories to simulate exposure conditions. These studies were well designed and included, skin and eye irritation; repeated eye and skin exposure. These tests were conducted at 50 times the expected swimming pool exposure levels. Eye and dermal irritation studies



provided, suggests that Heat\$avr was found to be non-irritating to the eyes and skin under acute exposure conditions.

Assessing the exposure concentration of Heat\$avr ingredients is equally important in conducting safety assessments. Concentration of Heat\$avr in the swimming pool will differ from the exposure concentration that adults and children will receive during normal swimming use. The independent test carried out in California in 2001 showed that concentration levels in a maintained pool should be below levels that would present an acute safety concern.

3.0 CONCLUSION

This assessment is based on a review of literature and data provided by the manufacturer augmented by outside literature found by our staff researchers.

However, this review confirms the following:

1. The studies provided would suggest there to be a low probability of skin or eye irritation under acute exposure conditions.
2. The product appears to have no deleterious effect on chlorine based sanitizers when used in accordance with manufacturers use instructions in a pool.
3. There is reason to believe that the primary constituents are either food/pharmaceutical grade which have prior sanctioning for use as a direct food additive.

Recommendations:

1. That Flexible Solutions maintain a dialog with The Toxicology Group, LLC (TTG) that includes providing TTG with copies of any future testing undertaken or literature that may be found.
2. That the Heat\$avr MSDS be upgraded to reflect any new data as it is generated.