



INNOVATIVE INTERVENTIONS (PTY) LTD

**RESIBOND CONCRETE REHABILITATION**  
**[ RESIN SYSTEM THAT CURES CONCRETE “CANCER” ]**

# WHAT IS CONCRETE “CANCER” AND WHY IT IS A GROWING GLOBAL CONCERN

There are 3 types of the phenomenon being described as a “cancer” in concrete, namely:

1

## SULPHATE ATTACK ON CONCRETE

Occurs when sulphuric acid reacts with calcium hydroxide in concrete to form calcium sulphate. This leads to the destruction of the polymeric nature of calcium hydroxide, simultaneously substituting the larger calcium sulphate molecule into the concrete matrix. These internal expansive forces inevitably result in separation of the concrete components and detachment of the concrete from steel reinforcement and/or aggregate with catastrophic loss of matrix integrity.

Sulphate attack on cementitious mortar/concrete matrixes is a world-wide phenomenon with raw water, sewerage and effluent carrying pipelines, aqueducts, and canals being most at risk of sustaining irreversible structural damage.

Intervention through timely implementation of effective preventative measures, maintenance and/or repair is the most cost-effective way of preserving concrete matrixes exposed to destructive environmental conditions.



**Catastrophic loss of concrete matrix integrity**



**Effects of sulphate attack in concrete reservoirs**

2

## ALKALI-SILICA REACTION IN CONCRETE.

In an alkali-silica reaction, alkali-sensitive constituents in certain aggregates interact with alkali and hydroxide ions in affected concrete matrixes, to form a viscous alkali-silica gel.

Alkali-silica reactions are contingent upon the availability and dispersion of water within affected concrete and the reactivity of aggregates utilised.

Localised expansive pressures can build to the point where irreversible damage to the concrete microstructure occurs.



Symptoms of advanced concrete “cancer”

3

## ALKALI-CARBONATE REACTION IN CONCRETE

The less common alkali-carbonate reaction is linked to inadvertent utilisation of certain dolomitic rock known to be unfit for use as an aggregate in concrete mixes.

Moisture driven, alkali-carbonate reactions “break down” dolomite with the consequent formation of expansive brucite crystals. As with ASR, deterioration of affected concrete matrixes is inevitable.

Alkali-silica reactions are contingent upon the availability and dispersion of water within affected concrete.

# A GROWING CAUSE OF CONCERN

## EXAMPLES OF CONCRETE AT RISK



Concrete canals, pipelines, reactors, and tanks are especially at risk when coming into contact with sewerage and/or industrial/agricultural effluents. Once breached raw sewerage/effluents flow into riverine environments, they invariably land up in our “raw water” resources.



Structures such as bridge supports, beams, lintels, tunnel support, retaining walls, lift/mine shafts etc., are at risk from “concrete cancer”.



Indications of corrosion in steel-reinforced concrete matrix



Conventional sealants also subject to sulphate attack



## WHAT IS BEING DONE ABOUT IT

Interventions currently being made in multiple countries, constitute remedial action only and are limited to:



Repairs to and/or “patching” of such concrete items.



Replacement of structural elements deemed non-salvageable.

This results in non-permanent treatment of the symptoms only, not the cause of concrete “cancer”.  
With time, structural concrete elements at risk are subject to recurring failure.

## INNOVATIVE INTERVENTIONS (PTY) LTD, INTRODUCES RESIBOND, A LASTING SOLUTION

Whether caused by **sulphate attack, alkali-silica or alkali-carbonate reactions**, concrete “cancer” can be permanently and cost-effectively dealt with through the use of the “Resibond” system.

Depending on the application, this solution involves the application/installation of proprietary polymeric systems to affected concrete which are proven to protect, strengthen and restore durability “critical – application “concrete structures.

## RESIBOND SYSTEM FEATURES:



May be deployed in the most demanding of conditions. (Even underwater if absolutely necessary.)



Cost-effective



Impermeable



Components are impervious to sulphate attack, alkali-silica or alkali-carbonate attack.



User and environmentally friendly

## BENEFITS



Restores the full “user life” of concrete matrixes.



It is a permanent solution to all forms of concrete “cancer”.



Effectively deployed at a fraction of the cost of structure replacement.



Does not merely put the concrete “cancer” into temporary remission, it is a permanent answer to the problem.



Structural elements may be put back into active service within hours (not 28 days as with conventional cement-based repairs).

## COMPOUNDED BENEFITS INCLUDE:



Prevention of loss of life and damage to property from the collapse of structures



Prevention of the environment and water supply etc. being adversely affected by leaking sewage etc.



Prevention of loss of water from damage and leaks in concrete piping, reservoirs, canals, dams, etc.

It is evident that the multiple applications of Resibond from Innovative Interventions (Pty) Ltd, can be used to solve a large number of concrete “cancer” related problems, both locally and abroad.



**Example of structure that can still  
be cost-effectively rehabilitated**



## **FIND OUT MORE**

Thank you for your interest in Resibond from Innovative Interventions (Pty) Ltd.  
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