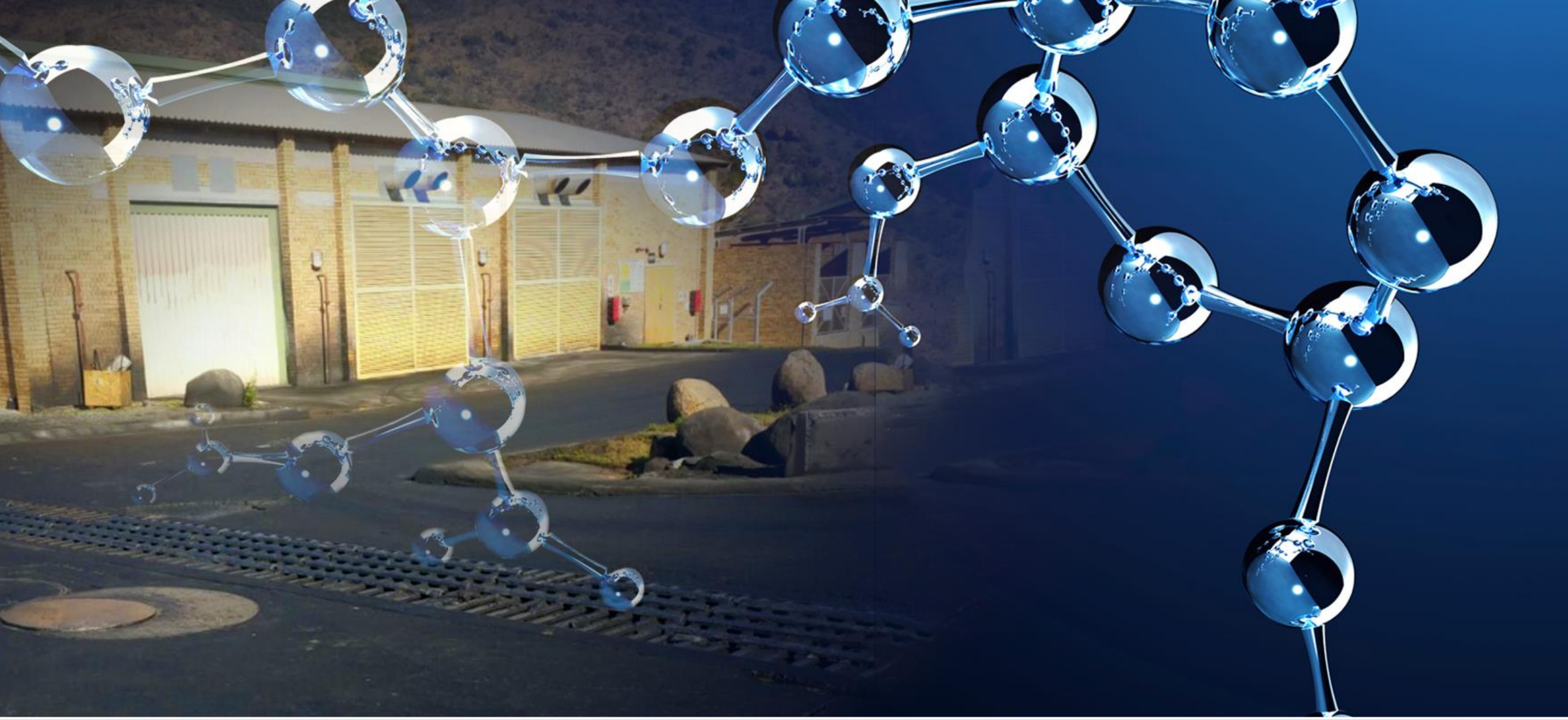

Mechanised Underground Mining And Hydrocarbon Contamination

Presented by Lubritech Manufacturing

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THE PROBLEM

HYDROCARBON CONTAMINATION…

This is not only a

SAFETY HAZZARD

but an

Environmental problem

as well!

IGNORING PRO-ACTIVE HYDROCARBON CONTAMINATION CONTROL

There could be lapses in adherence to good practice in environmental management and ignoring pro-active hydrocarbon contamination control.

- **Pressure of reducing Operating Costs**
- **Lack of information on impact of contamination**
- **Training on how to handle oil spills effectively**

Inadequately controlling hydrocarbon contamination on mining sites can have many negative consequences for a company:

- **Safety**
- **Environmental**
- **Metallurgical Plant Performance**

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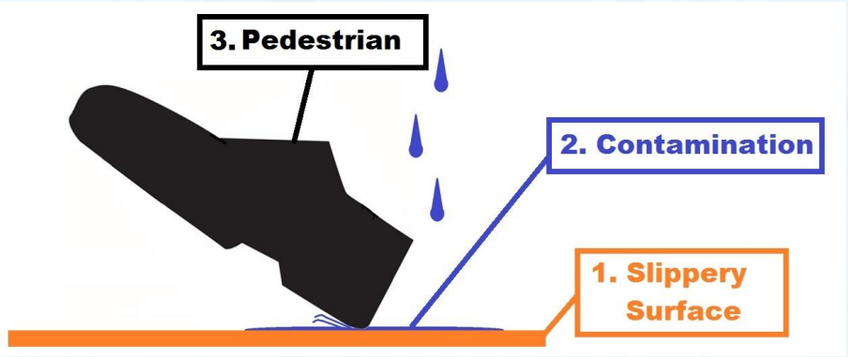
SAFETY FIRST

- Pipe bursts, fuel and oil spills occur on a regular basis in above and underground workshops and mining areas.
- Due to these spills decline's, roadways and all concrete areas are covered with oil on a daily basis.
- Mines use thousands of litres of degreaser every month to wash these spills away and move the oil from point A to point B , the underground dams or the above ground dams.



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ENVIRONMENTAL

Fuel and Oil spills often occur during routine operations, and fuel and oil leaks can occur in fuel and oil systems which are assumed to be leak-tight and failsafe.

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ENVIRONMENTAL

- Mechanized mining equipment moves the oil, via the large tyres and pressurized hoses that break from deep under the mine to all surfaces above ground that it travels on.

- This happens on a daily basis hence the surface areas become saturated with hydrocarbon contamination. Even after it is washed off it quickly turns black again due to capillary action.

- The hydrocarbons needs to be pulled out of these roadways on a continuous basis every day as they are deposited on a daily basis. In the event that a mine used **H Tech** from day 1, on a daily basis, this saturation would not have taken place.

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WHAT IS CAPILLARY ACTION AND HOW DOES IT WORK?

- On a daily basis mechanised mining equipment moves the oil contamination from underground to above ground by means of oil sticking to the large tyres.
- Due to concrete and soil being porous the area is saturated with hydrocarbons and sinks into the concrete or soil.
- Core drilling has shown that this can be up to 200mm in concrete and in soil a few meters.
- Heat from the sun fast track this process.

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WHAT IS THE SOLUTION?

H Tech

- **H Tech** changes hydrocarbons to inert organo-silicates.
- **H Tech** is at the forefront of the natural and environmentally safe treatment of the remediation of oil staining and pollution.
- **H Tech** is safe to use and will have little or no negative impact on the downstream flotation circuit of the concentrator plant.
- **H Tech** has been specifically designed to render the hydrocarbons inert.
- **H Tech** is environmentally safer to use than detergents and solvent based degreasers.

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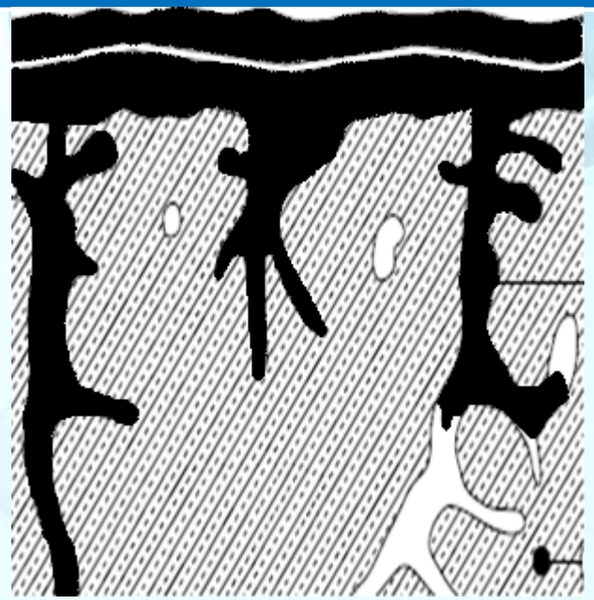
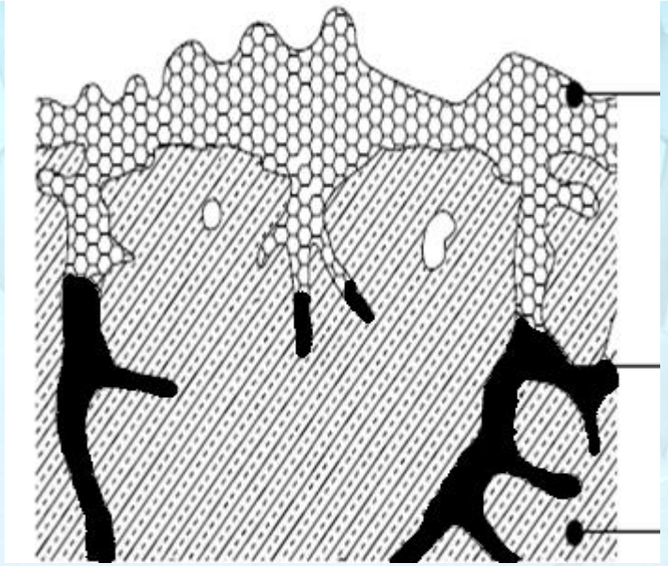
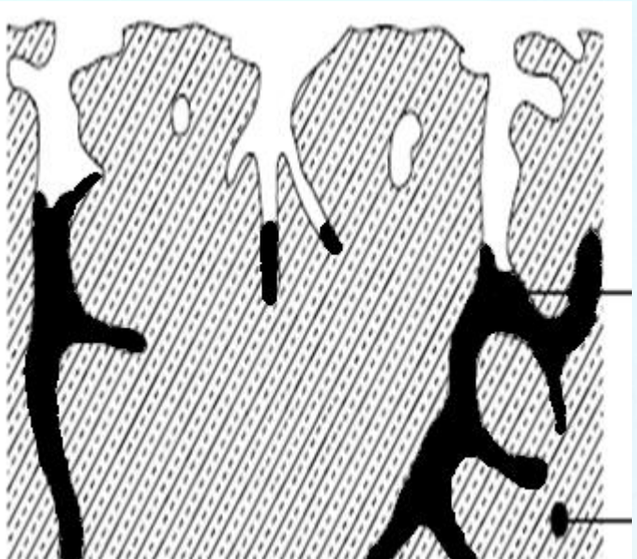
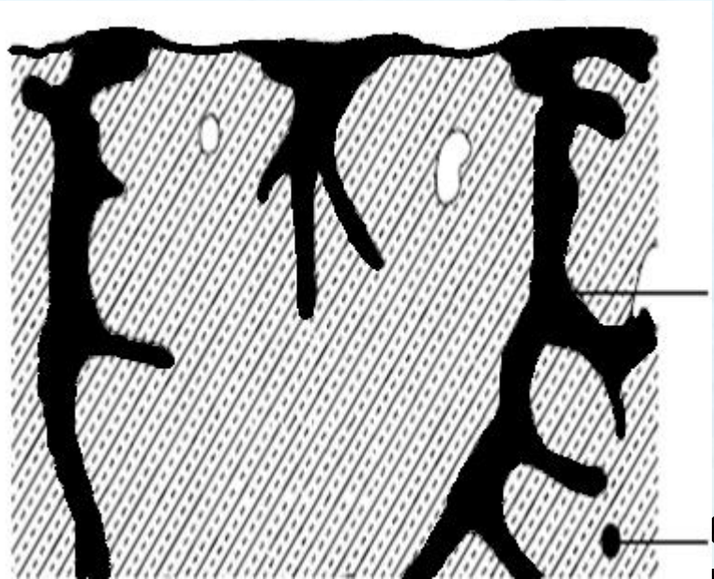
OIL-CONTAMINATED CONCRETE FLOOR









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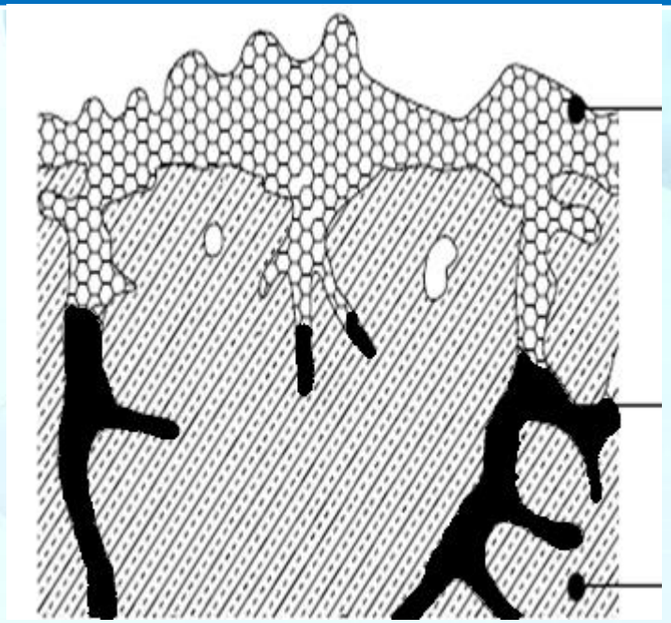
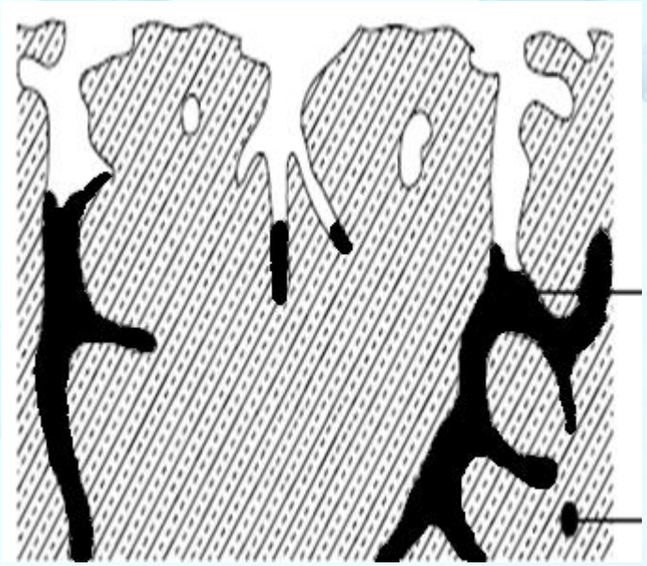
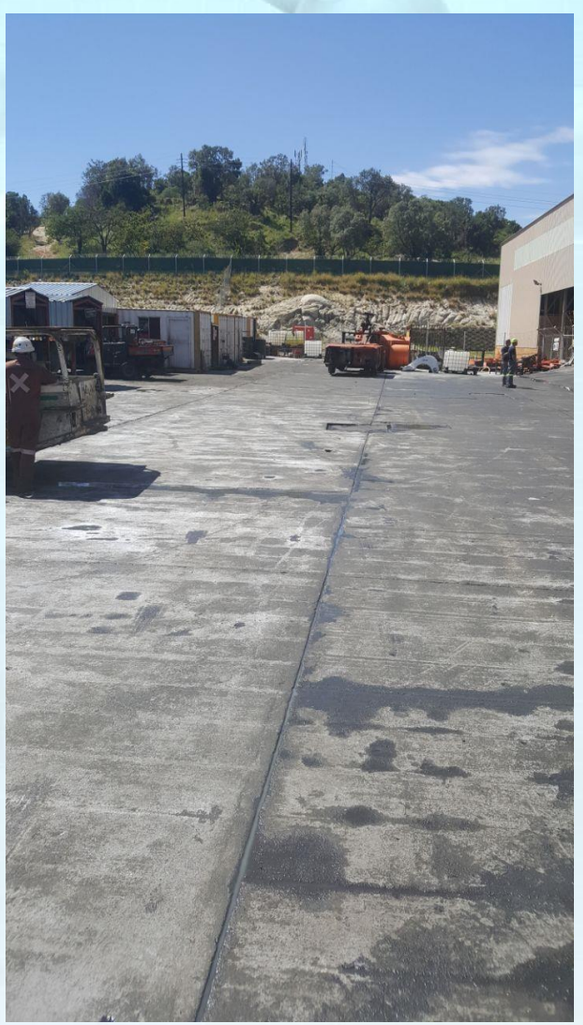
CLEANING WITH H TECH HYDROCARBON ELIMINATOR



- **H Tech is applied under pressure and atomized thereby forced into the capillaries.**
- **The existing hydrocarbon chains are separated. H Tech makes the micro oil particles inert.**
- **The inert micro oil particles are transported to the surface by the capillary action.**
- **The foam action accelerates the effect of rising.**

THE CAPILLARIES ARE FREE OF OIL AT THE SURFACE





- **The surface and part of the capillaries are cleared of the oil.**
- **Within a few hours oil will rise to the surface again. The process needs to be repeated again.**
- **Depending on the saturation off the concrete slab and how quickly the oil rises up from the capillaries this process might take a few months.**

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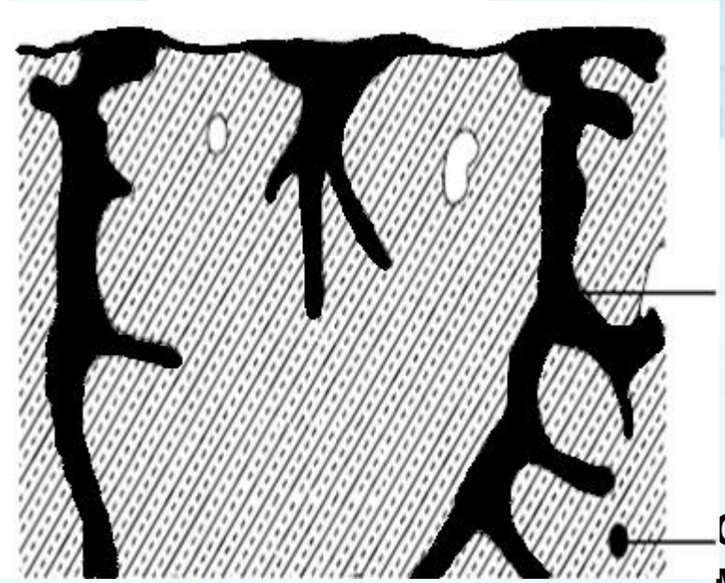
THE CAPILLARIES ARE FREE OF OIL AT THE SURFACE



- The concrete floor has been treated with H Tech and the top layer of Hydrocarbons have been removed. The oil comes to the surface from the capillaries.
- This process can extend over a number of hours and therefore you will see oil on top of the previously clean concrete.
- No vehicles have driven on the concrete nor has any oil spillage taken place.

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H Tech

- **H Tech PROPERTIES:**

➢ Non-flammable
➢ Water-soluble
➢ Fire-suppressant
➢ Inert

- **H Tech ACTION:**

- Eradicates oil, diesel, petrol, grease, fat stains and slicks from all hard surfaces, including tarred roads.

- There will be no leaking of contaminants into the soil, as they no longer possess their chemical fingerprint.

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H Tech

H Tech APPLICATION:

- Is safe for use in environmentally sensitive areas.
- Can be used on: Tarred roads, bricks, concrete, mining vehicles, general machinery, steel structures and soil.
- H Tech effectively remediates this action.
- Safety is put first and being compliant follows.
- Positive influence on the metallurgical plant is achieved.

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EXAMPLES

General Practice

- Degreaser is used to cut the hydrocarbons off the contaminated surface.
- Leaving the floor still slippery.

Proposed Solution

- H Tech is used to make the hydrocarbons inert.
- Leaving the floor non slippery

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EXAMPLES

General Practice

- A Broom is used to work the degreaser into the floor.
- This is labour intensive.

Proposed Solution

- H Tech is sprayed on with a high pressure hose.
- Time and labour is used productively.

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EXAMPLES

General Practice

- The hydrocarbons are washed off moving the problem from point A to point B.
- Just moving the problem around in circles.

Proposed Solution

- H Tech dries out leaving the hydrocarbons inert.
- A safe and harmless environment is left.

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EXAMPLES

General Practice

- Slippery areas are unsafe and leaves workshops and concrete pad areas non-compliant.

Proposed Solution

- A safe environment is left leaving all areas clean & compliant .

EXAMPLES

General Practice

- Pipes and water ways are contaminated and an environmental problem.

Proposed Solution

- Pipes and water ways are now clean and the mine is compliant in this area.

EXAMPLES

General Practice

- Fatal accidents can cause a mine to be temporarily closed down, with a Section 54 for a period, resulting in millions being lost.

Proposed Solution

- A clean and compliant working area.
- Safety is improved and risk of accidents reduced.

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DOWNSTREAM IMPACT OF HYDROCARBONS

- After passing through oil separation equipment Degreaser and Hydrocarbon contamination still end up in the dams.

- Processing plants use this water in flotation and it has been proven that this has a negative effect on the process plant performance.

Location	Total Hydrocarbons C10 to C40	Diesel Fuel C10 – C28	Engen Oil C22 – C30	Hydraulic Oil C30 – C40
Process Dam	178 ppm	0 ppm	78 ppm	100 ppm
2nd Process Dam	117,139 ppm	5,526 ppm	54,374 ppm	57,239 ppm
Tailings Dam	363 ppm	0 ppm	152 ppm	211 ppm
Underground Dam	162 ppm	0 ppm	65 ppm	97 ppm

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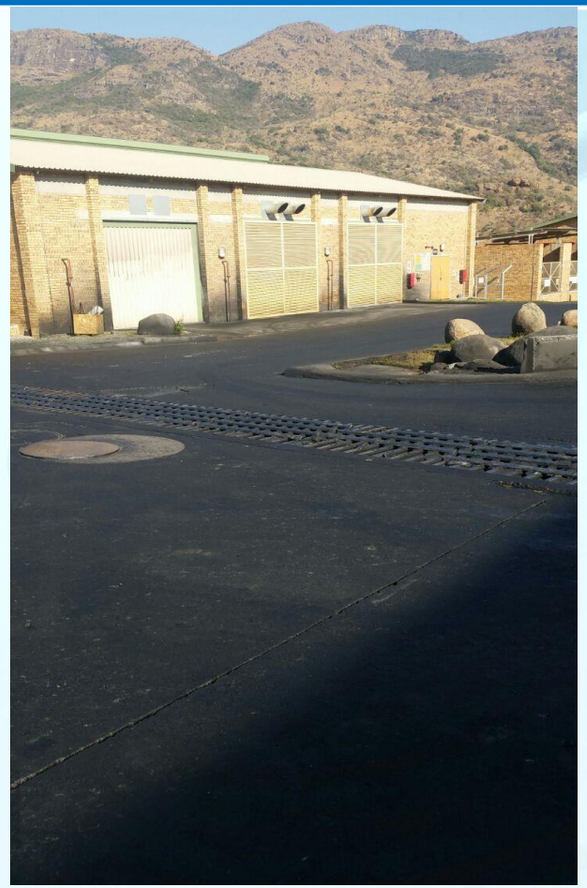

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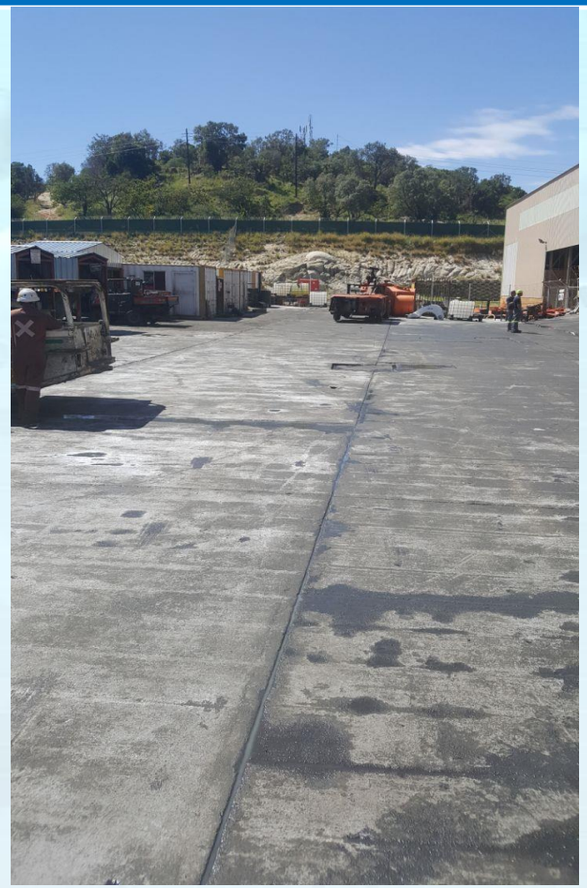

Give your employees a clean & safe working environment. Call **Arno on 082-494-2819** or **Ferdi on 061-426-5621** to set up a demonstration at your mine.