



TSOZA
REFINARIA
DE OURO DE
MOÇAMBIQUE



Tsoza Refinery



Presentation to;

9th Annual CASM Conference

September 8 to 14

A Global Partnership For Action

Presented by:

DANCOR SPIES

35 Minutes



CHALLENGE

- Eradicate and **BAN** from Mozambican soil the indiscriminate use of **MERCURY** and other **Metallic Chemicals**



GOLD IN MOZAMBIQUE

- Gold deposits are spread geographically over a vast area:
 - Manica to the Niassa Province on the northern border with Tanzania
 - Sporadically through the central provinces of Cabo de Gado, Nampula and Zambezia
 - Tete



BUYING STATIONS

Strategically placed Gold Processing Centres (Buying Stations) in Mozambique



- ★ Manica
- ★ Tete
- ★ Lichinga
- ★ Nampula
- ★ Cabo De Gado



BUYING STATION

- **Consist of;**
 - **Complete Analytical Capabilities (Assay including X-Ray Spectrometry and SG)**
 - **Weight Facilities**
 - **Payment Facilities**
 - **Training and Knowledge Centre**
 - **Landing Facilities (Rotary & Fixed Wing)**



SYSTEMS AND PROCEDURES

- **Comply with Standards and Procedures;**
 - **General Quality - ISO 9001, QMS Auditing**
 - **Greenhouse Gases & Carbon Footprint - ISO 14001, ISO 14064**
 - **Occupational Health - OHSAS 18001**



SYSTEMS AND PROCEDURES

- **Database of Miner (Origin)**
- **Gold Fingerprint (Composition) Database**
- **Full Audit trail from Miner to Refined product**



OUR RESPONSIBILITY

Gold is a **National Asset of Mozambique and needs to be managed as such**

- **Our task will inter alia be, to be;**
 - **The single Gold Knowledge Base Centre and Database**
 - **The single Audit Point**
 - **The single Tax collection Point**
 - **The single Exit Point**



THE CHALLENGE

- Eradicate and **BAN** from Mozambican soil the indiscriminate use of **MERCURY** and other **Metallic Chemicals**



MERCURY

- Most commonly used by Small Miners digging and panning for Gold
- Commendable efforts by Government, NGO's and others to train and educate Miners in safe use and environmental impact
- Status will always be to that of a "Loaded Gun"



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TECHNOLOGICAL SILVER BULLET TO A MERCURY FREE MOZAMBIQUE FOUND





THE DANCOR PROCESS™

- Technology developed in AFRICA
- African solution for a worldwide problem
- Development took 7 Years and funded from own resources
- Technology to refine gold;
 - To a higher purity grade
 - Faster & Safer
 - More cost effective and with increased yield
 - Completely environmentally sound

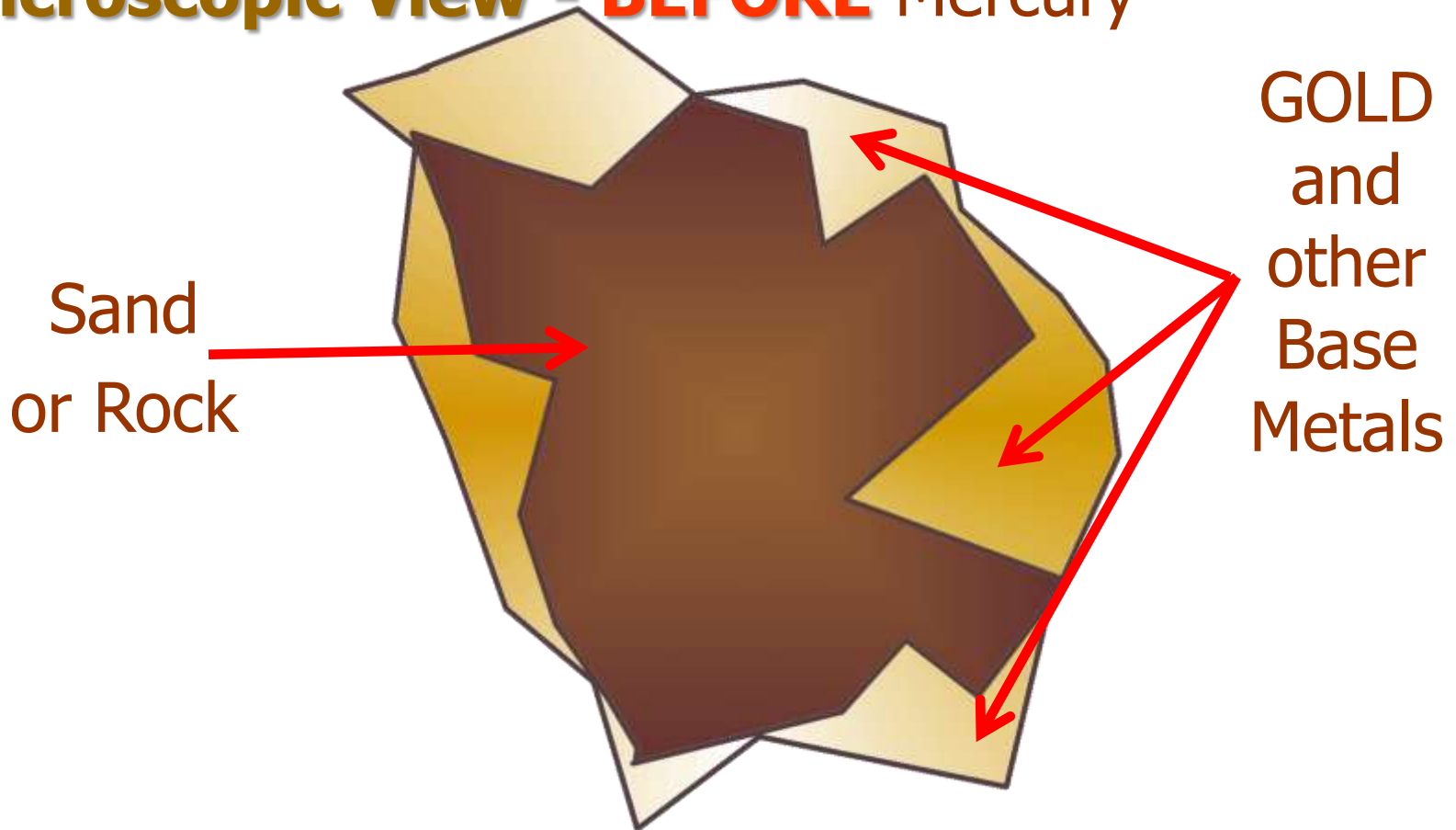


- This Hydro-Metallurgical **ECO** Technology entails:
 - Production cost saving of up to 35%
 - Less than US\$ 4.00 per kilogram Cost to Refine (excluding CAPEX)
 - Increased yield – additional ore to final product efficiency saving up to 25% when the use of mercury is discarded.



A VERY CLOSE LOOK

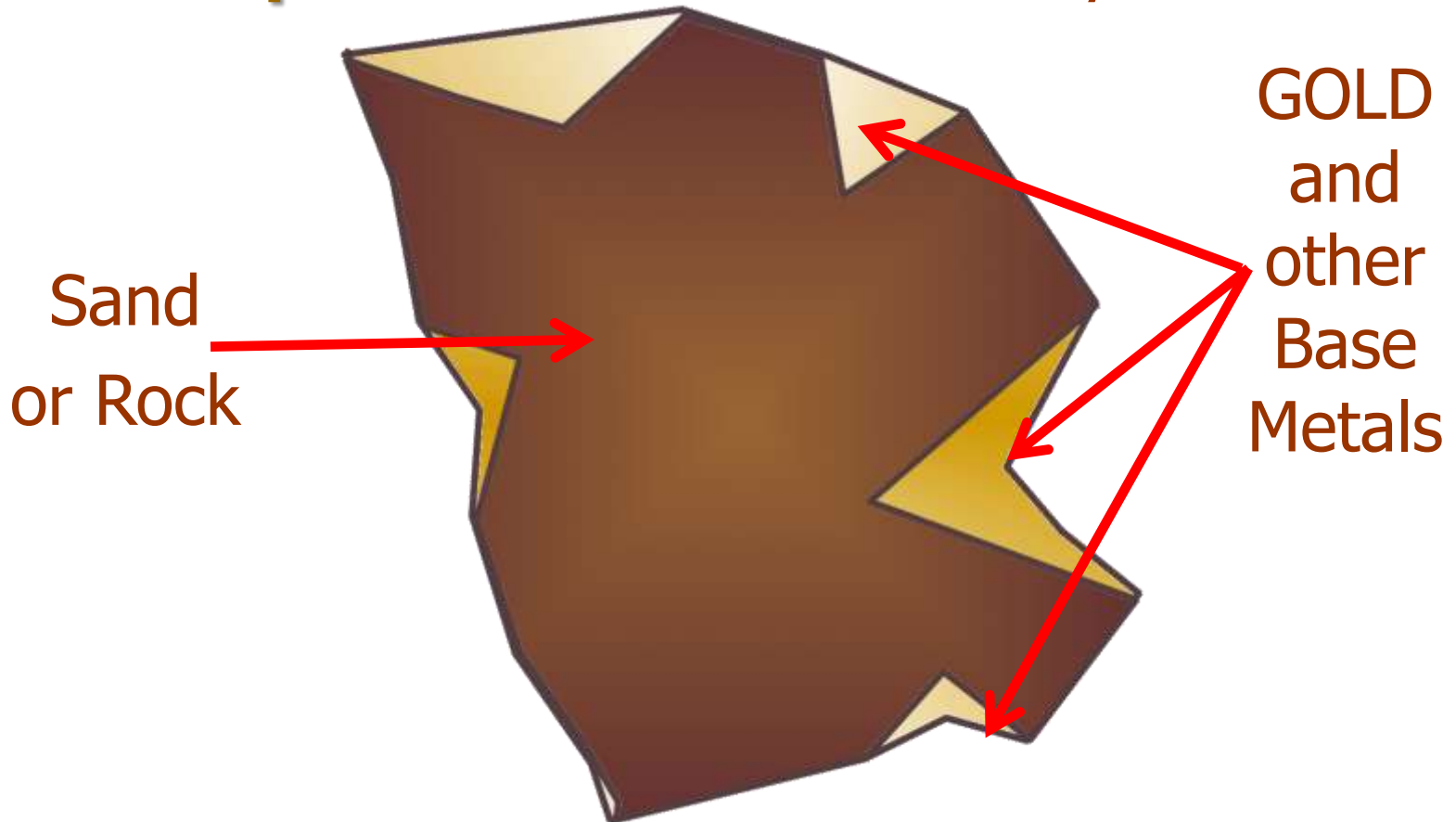
Microscopic View - BEFORE Mercury





A VERY CLOSE LOOK

Microscopic View - AFTER Mercury





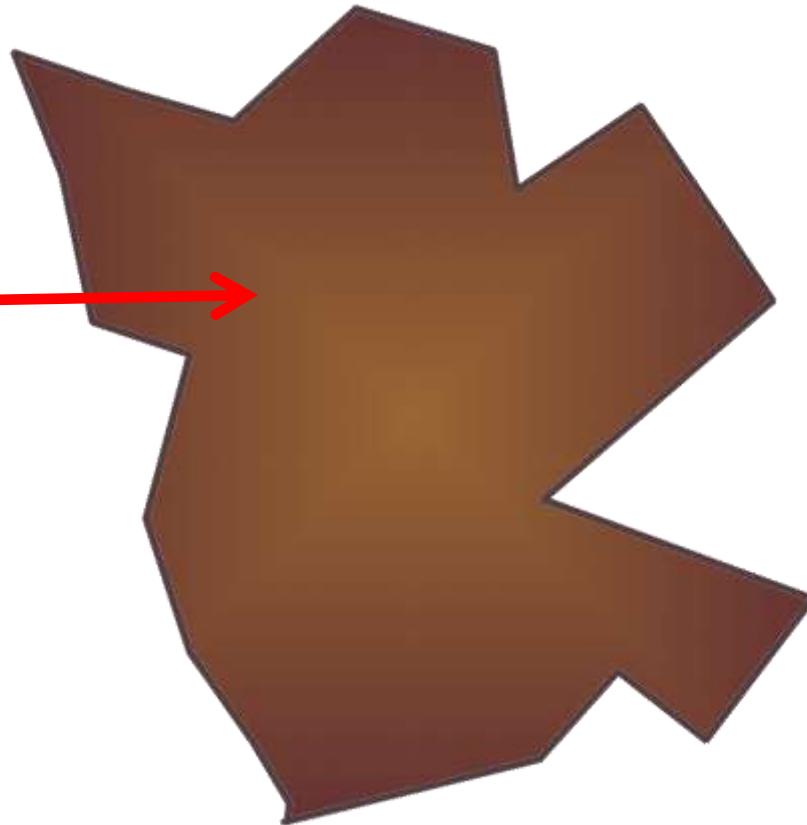
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A VERY CLOSE LOOK

AFTER the **DANCOR Process™**

Sand
or Rock



ALL
GOLD
and
other
Base
Metals
extracted



- Extremely tolerant process
- Consistent output quality
- Bulk efficient – Various Plant Models with capacity from 10 kg to 1000 kg per shift
- Low energy consumption
- Small footprint
- Reduced production time cycle



- Reduced plant inventory lockup time
- **NO** dormant or latent plant inventory
- **NO** production or “in process” loss
- **NO** hazardous or toxic waste
- **NO** toxic fumes or gas emitted
- **NO** water, air, noise or environment pollution



- **NO** Cyanide used
- **NO** Chlorine gas used
- **NO** Potassium Cyanide used
- **NO** Solvents used
- **NO** Mercury used
- All Base Metals recovered
- **Totally organic**



- Successfully replaces the Miller Chlorination and Wohlwill refining techniques used in LBMA Refineries Worldwide.
- Purity up to 99.999%
- Accommodates a wide variety of feed stock from as little gold content as 100.0 (10%).
 - Cathode Sludge (Wet or dry)
 - Doré Bullion
 - Granular or Atomized Doré Bullion



- Alluvial Tailings
- Zinc precipitation filtrates
- Recycled jewellers waste
- Exo- and Endogenetic deposits.
- Gold bearing ore concentrate

Technology and Laboratory Plant with capacity of 30kg per shift, currently **OPERATIONAL** in **MANICA**, Mozambique where the first ever totally **“GREEN”** Gold was refined



- The merits and intrinsic worth of the Dancor Process™ has weathered the intense scrutiny of Gold Fields, Rand Refinery, as well as Metal Process Laboratories (*South Africa*).
- All aspect including the composition of the effluent stream has been analysed, tested, verified and confirmed.



The Dancor Process TM conforms
to the notion;

The epitome of superior
technology and design is not
when anything else can be
added, but rather, when nothing
else can be taken away.



THE CHALLENGE

- Eradicate and **BAN** from Mozambican soil the indiscriminate use of **MERCURY** and other **Metallic Chemicals**



HOW?

- **Requires NO special or extraordinary procedure or method**
- **No change to current methodology**
- **Miner to follow standard steps and method up the point prior to introduction of Mercury**
- **Send to Refinery as is**



ROLE OF CASM AND GOVERNMENT

Mercury free Mozambique can only be implemented once Tsoza infrastructure is in place.

- **Assist with production of information DVD to inform Miners as to life without and beyond Mercury**
- **Assist and sponsor “Road Show” to all mining communities.**



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MANICA REFINERY





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REFINERY VISIT

**Due to Security, logistical
and other concerns, we
regret that no visit to the
Refinery in Manica will
take place**



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THANK YOU

Have a safe journey home

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