

A woman wearing a white headwrap and an orange shirt is sitting on the ground, working with a child in a blue shirt. They are processing gold ore in a bowl. The woman is using a wooden tool to mix the ore in a metal bowl. The child is sitting next to her, also working with the ore. There are other bowls and tools around them, including a white bucket and a bowl with a white substance. The background is a dirt ground.

Health in Artisanal and Small-Scale Gold Mining

Training Tool

Version 1.0



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Who is this document for?

This document was created to support health workers who practice in communities where Artisanal and Small-Scale Gold Mining (ASGM) occurs.

This guide is illustrated and contains key messages that should be conveyed to the community. This guide can be used for group information sessions or for individual sessions.

This document has 2 main objectives:

- Inform the community on the health risks associated with ASGM
- Encourage the community to prevent the main health risks using simple solutions

We encourage you to edit and customize this guide to be useful and specific to the context in which it is used.

How to use this tool?

The training tools was created so that the page containing the image faces the individual or the group.

The page containing the text will face you and serve as a memory aid.

The best way to share the information is to:

- Greet your patient or your group and sit facing them.
- Make sure that your patient can clearly see the images at all time.
- Point to the image while talking about it.
- Speak clearly and use words that the person can understand.
- Avoid reading the text directly.
- Try to involve the person by asking questions about their own experience.

Mercury is used in Artisanal and Small-Scale Gold Mining (ASGM) to capture gold.

This mercury is silver colored and is a heavy liquid.

It is often sold in plastic bags or small bottles.

Mercury releases toxic vapors.

These vapors are invisible and odorless.

Mercury releases vapors when the amalgam is heated.

Mercury also releases a bit of vapors when it is left in open air without being heated. Mercury releases vapors at normal room temperature.

People in close proximity to mercury will breath in these toxic vapors.

If you touch mercury with bare hands, you will also be exposed through your skin.

Mercury



Mercury releases toxic vapors and contaminates:



When heating the amalgam



When touching it with bare hands



When used in open air, without heating



Mercury vapors stick to objects, walls and clothes that are close-by.

These vapors are also carried by the wind towards people and houses.

When mercury sticks to something, it contaminates it. This lasts a long time, months or even years.

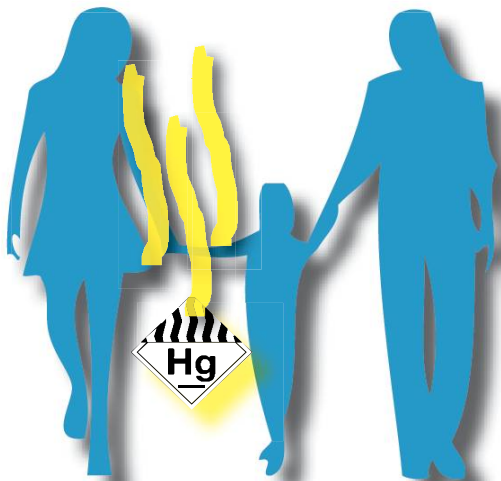
Contaminated means that the vapors are now going to be breathed in by people who are in close proximity to these objects.

We cannot see or smell mercury vapors.

Mercury



The wind carries the vapors everywhere.
The vapors stick to objects and
people.



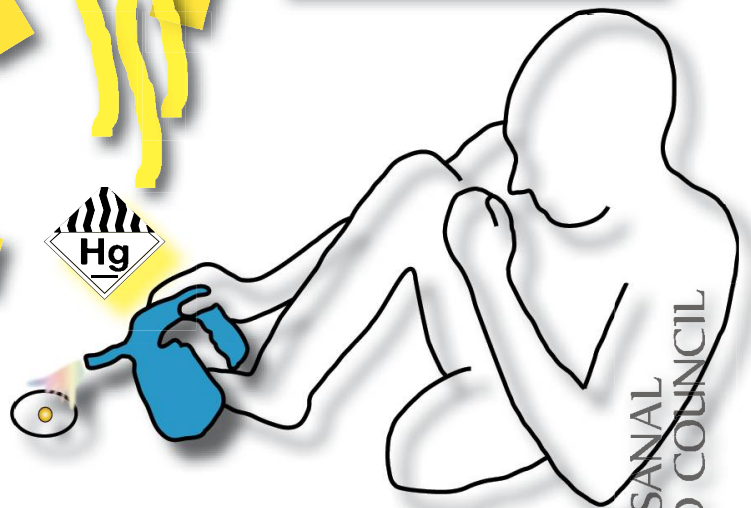
People



Houses



Working clothes



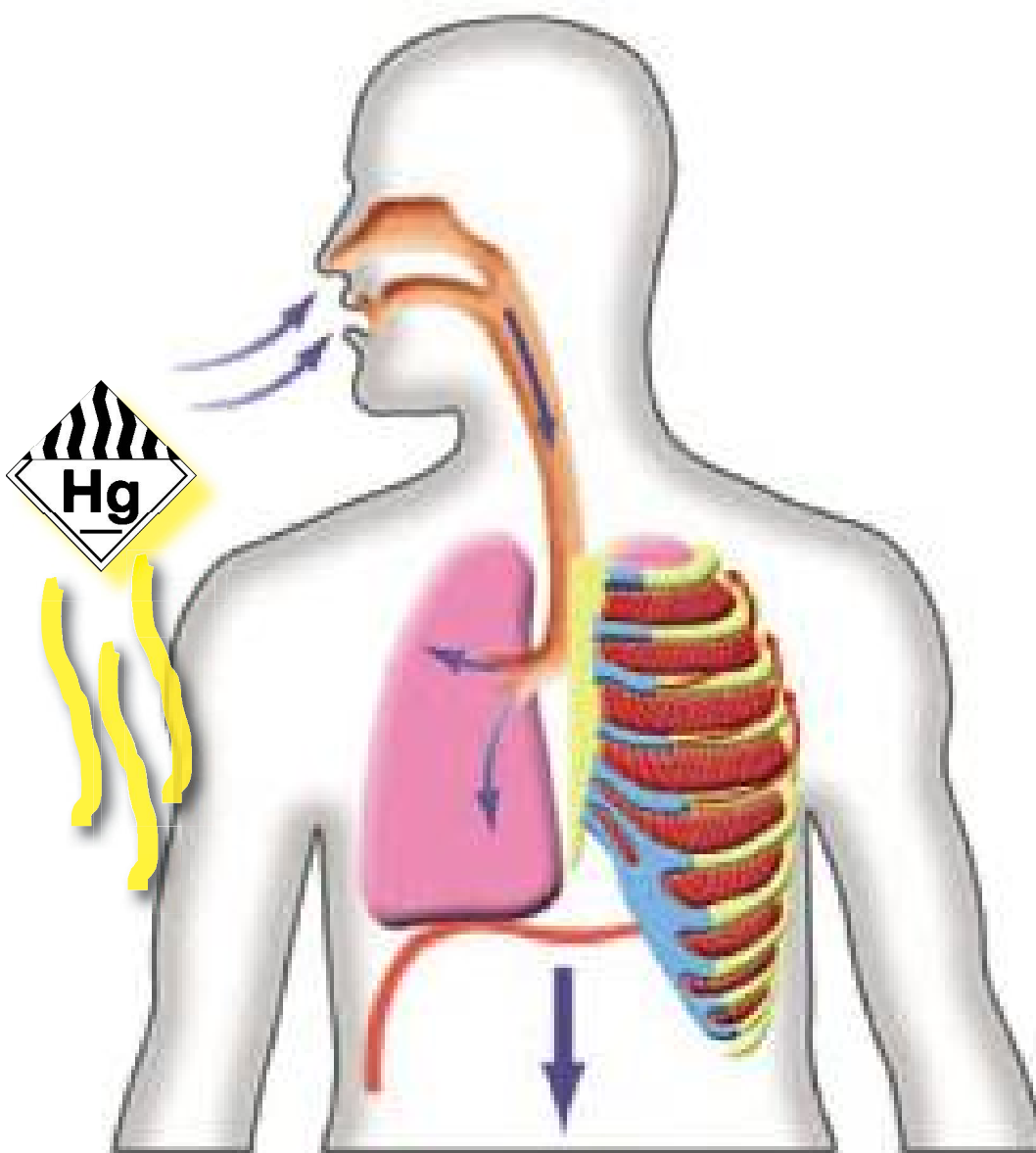
When people breathe in mercury vapors, mercury enters the lungs and spreads throughout the body.

Putting a piece of clothe over the mouth does not change anything. Only using a special mask can protect you.

Mercury



The vapors enter the lungs



Mercury can make you seriously ill. It can take a long time before the disease begins or it can happen really fast.

The problems can be:

- Uncoordinated walking
- Impaired balance and coordination
- Metallic taste
- Headaches
- Fatigue
- Emotional changes (sad, angry, etc)
- Shaking
- Difficulty breathing and coughing
- Color changes in the mouth

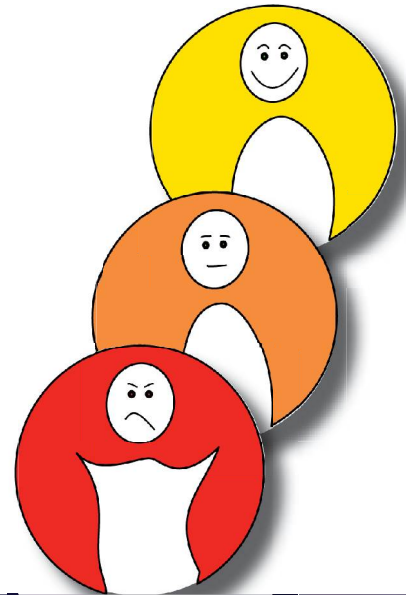
The effects are often permanent (will not go away).

Medication can help, but only if you take the medication AND stay away from mercury.

Sometimes, the effects may disappear or fade away without taking any medication if the person stays away from mercury.

It is very important to protect yourself before the disease begins!

Mercury makes you sick



www.sclera.be



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Mercury is very dangerous for children and fetuses.

The effects on the brain are very severe, much more severe than in adults, because the brain has not finished developing.

The effects are similar as in adults, but are much faster.

The effects can be permanent.

Medication can help but only if the child takes the medication AND the child stays away from mercury

Sometimes, the effects may disappear naturally or fade away, but only if the child is kept very far away from the mercury.

Children and pregnant women should not work with mercury or be near an adult that works with mercury.

Mercury is more dangerous for children and pregnant women.



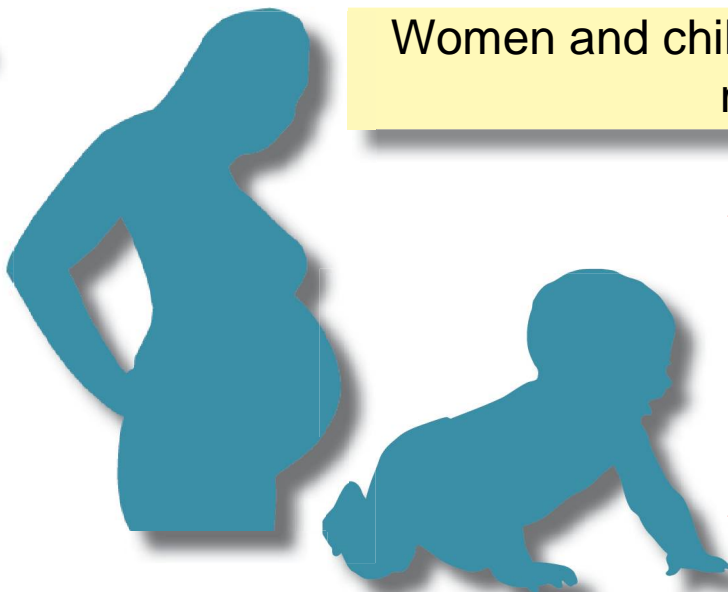
It is important to protect yourself against mercury. There are easy solutions to avoid breathing in mercury vapors.

1. Since the effects are extreme in children and fetuses, children and pregnant women should never touch, play or be in a close proximity to a place where mercury is used.

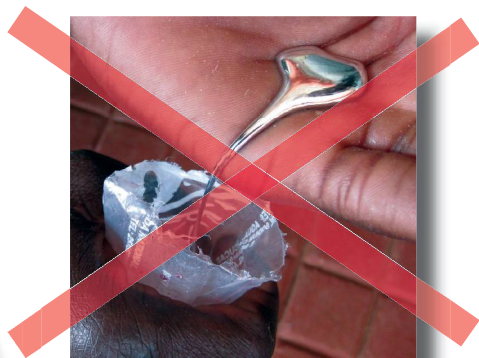
2. Mercury should always be stored outside in a solid bottle with a good lid.

How to protect yourself from Mercury?

1.



Women and children stay far away from mercury.



2.



Mercury is kept outside in a closed bottle.



3. Never touch mercury or the amalgam with your bare hands. Wear gloves or use a stick to mix the amalgam.

4. If possible, use a respirator with activated charcoal each time mercury is used. It is the only type of special respirator that will protect you against mercury vapors. This respirator prevents vapors from entering the lungs. Other masks or clothes are ineffective against mercury.

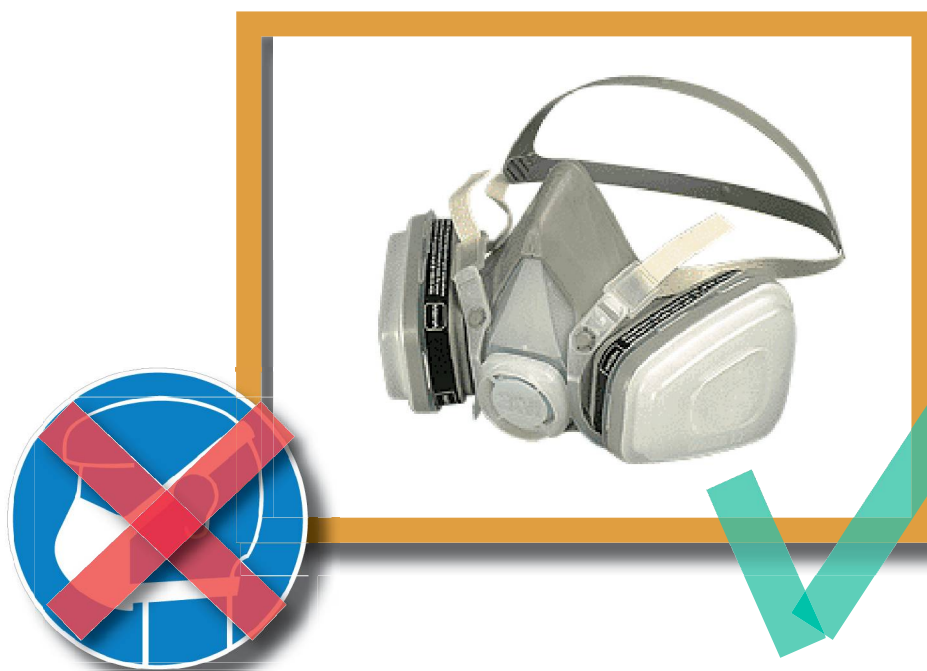
How to protect yourself from mercury?

3.



Do not touch mercury with your bare hand

4.



Use a special respirator

5. Create a designated area where the amalgam will be burned.

Leave all equipment (including work clothes, retort, torch) at the designated location.

This place must be:

- Well ventilated
- Located far from the village
- Located so that the winds do not bring the vapors towards the homes (downwind)

If you have access to it, you can use a retort to burn the amalgam. A retort is a small device that can capture mercury vapors.

How to protect yourself from mercury?

5.

The burning is done far away from the village



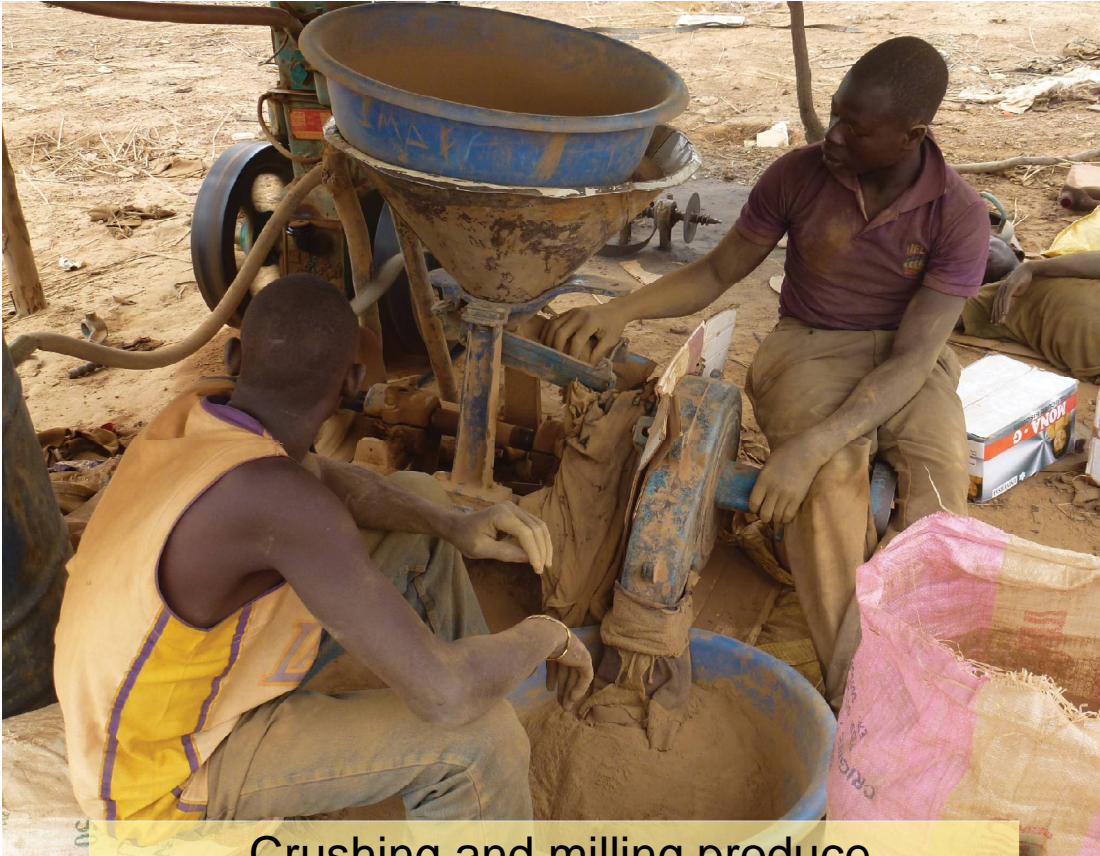
Use a retort. Leave your work clothes far away from the house.



In ASGM, crushing and milling the ore produce a lot of dust.

Dust created by milling is different from normal dust. This is because this dust is made by breaking very hard rocks that contain gold. This dust is often more dangerous than normal dust.

Dust



Crushing and milling produce a lot of dust



Dust is blown away by the wind and is deposited everywhere, on the village, the soil, the homes, the fields and the people.

People breathe in the dust and it enters their lungs.

Dust



Dust spreads everywhere.

Dust created by the mills can make you very sick.
It hurts the lungs.

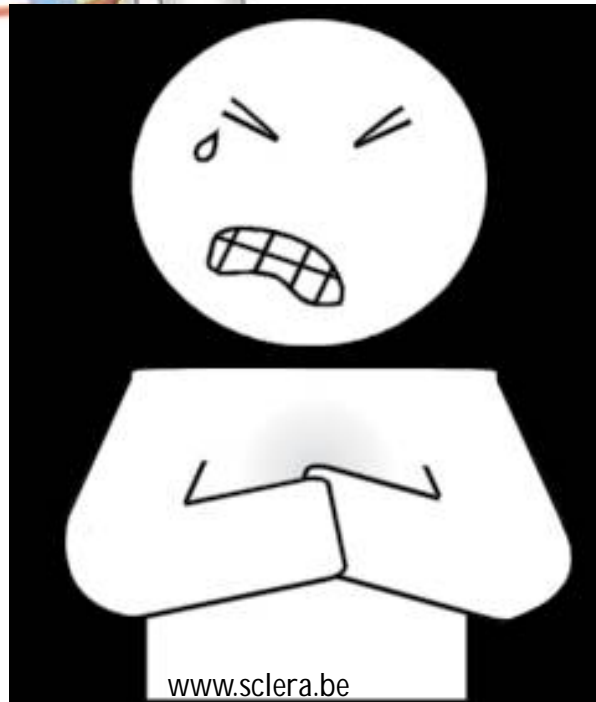
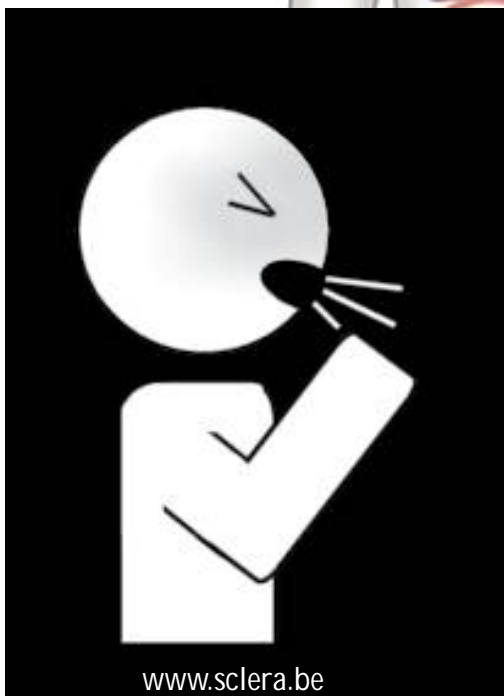
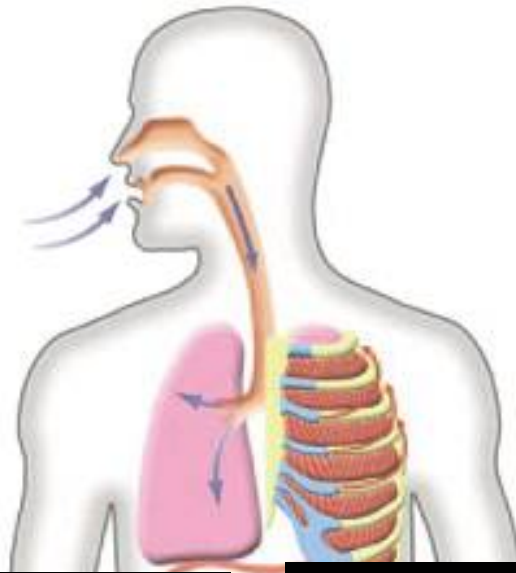
The dust causes:

- Cough
- Chest pains
- Shortness of breath (difficulty breathing)
- Respiratory infections

The effects can be permanent.

Medication can help a little with the pain and the infections but only if you take the medication AND stay away from dust created by ASGM.

Dust makes you sick



There are simple solutions to produce and breathe in less dust.

1. As with mercury, it is necessary to keep all the work areas away from the village, so that the winds do not bring dust into the village (downwind). This will reduce the dangers to the villagers.

You can create a designated area for the mills.

The place has to be :

- Well ventilated
- Far from the village
- Placed so that the wind do not take the dust towards the village.

Simple Solutions to protect yourself from dust

1.

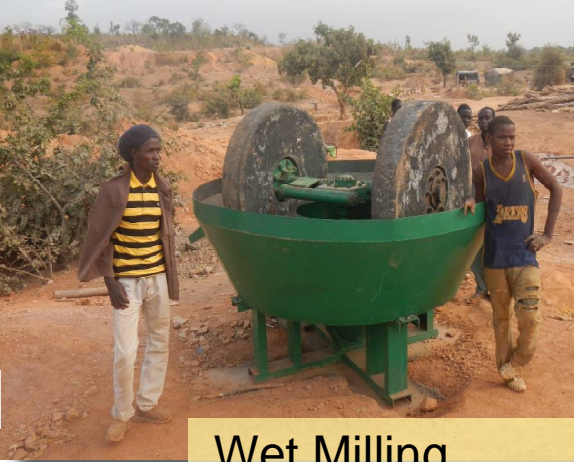


Crushing and milling is done far away from the village.

2. If possible, use wet crushing and milling methods (with water) to reduce the amount of dust.
3. Use special dust masks. A simple piece of cloth is not effective.
4. Increase ventilation in crushing and milling areas, tunnels etc.

Simple Solutions to protect yourself from dust.

2.



Wet Milling

3.



Special Masks

4.



Well ventilated tunnel and crushing area

Ore processing machines poses several dangers to the operators.

The equipment that are commonly used on sites are:

1. The Crusher
2. The Mill
3. The Shaking Table

Security around the equipment



1.

Crusher



2.

Mill



3.

Shaking Table

You have to be careful with the equipment, especially with the moving parts, since they can cause serious injuries. It is recommended to surround the machines with a fence to prevent accidents.

In particular, be careful with:

1. All motors and belts.
2. The jaws of the crusher.
3. The wheels of the mill. People often want to look into the bowl while the wheels are turning. This should not be allowed!
4. The shaking table. You must keep your distance from the table while it is on (shakes).

Security around the machinery

1. Motors



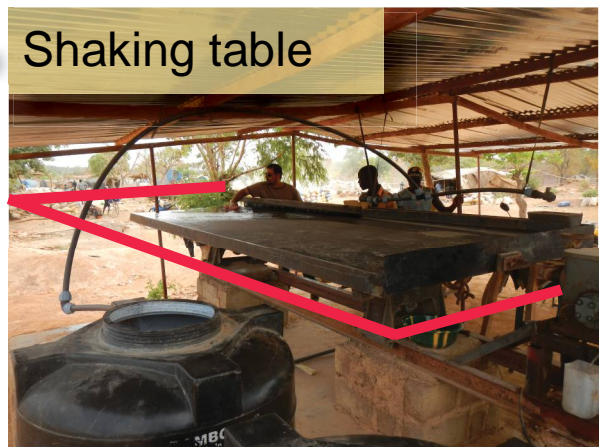
2. Jaws



3. Wheel



4. Shaking table

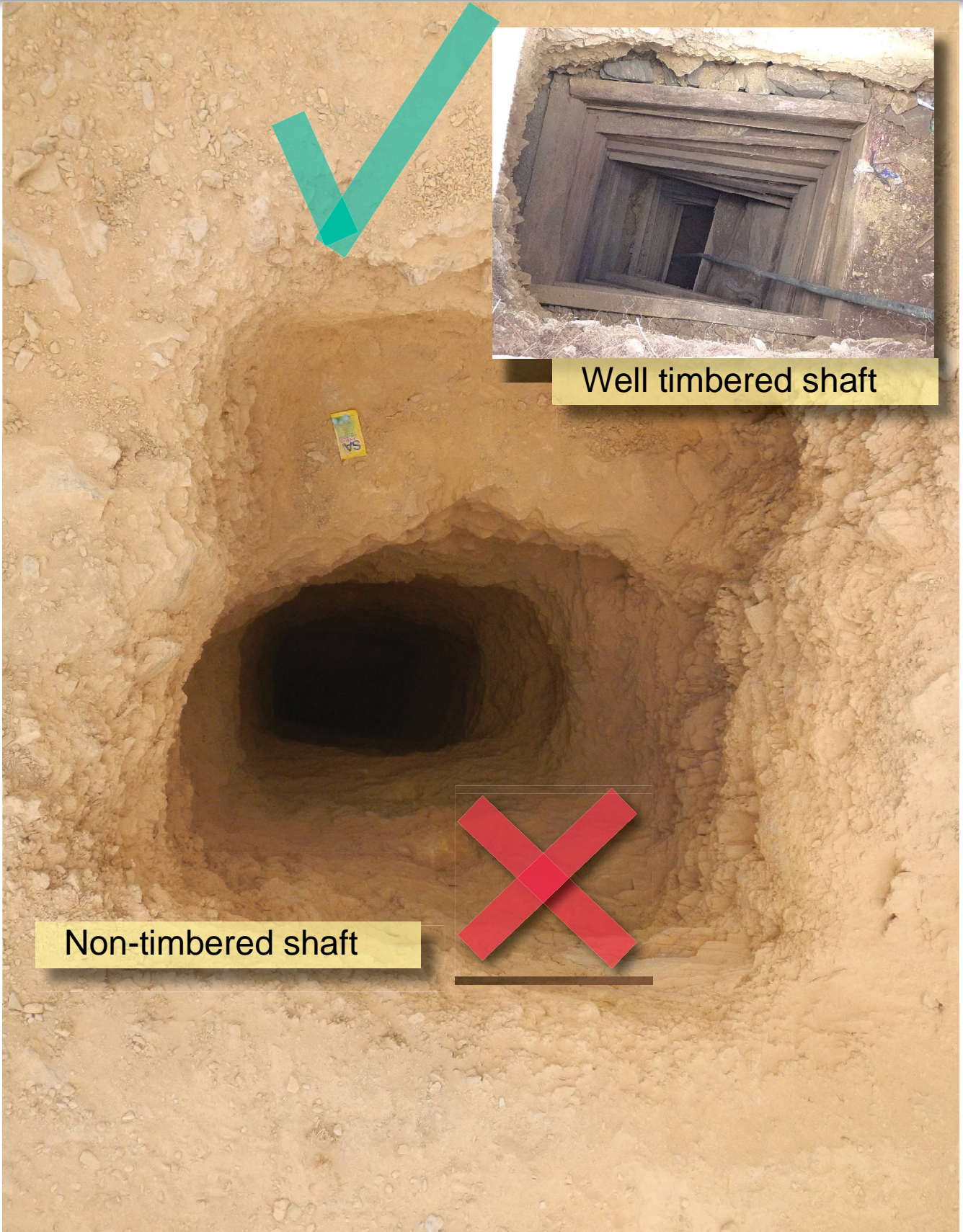


The shafts poses several safety risks to the miners working in and around the mines. There is a danger of collapse and also of falls.

1. The shafts must be well structured to ensure that there is no landslides or collapse. You also have to space them out to ensure that the structural integrity of the mine is not compromised. Horizontal shafts (tunnels that connect the vertical shafts) are not recommended.

2. The shafts must be clearly marked to ensure that no one falls through the holes. They should be surrounded by a fence.

Security around the shafts



Well timbered shaft

Non-timbered shaft

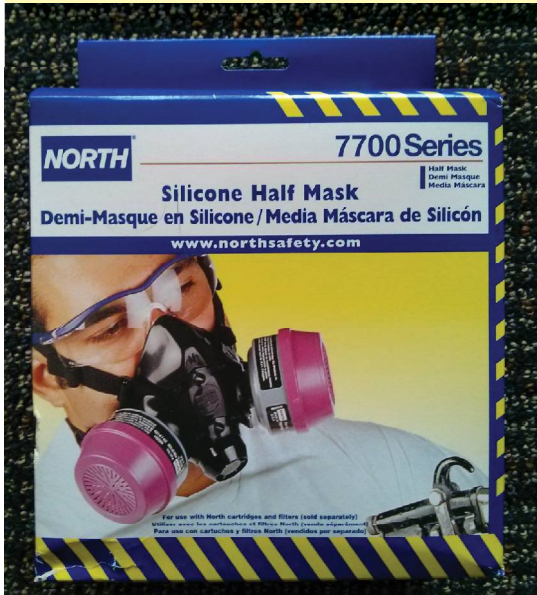
Always wear the following equipment:

1. Approved masks to protect against mercury
2. Approved anti-dust masks
3. Hard Helmet
4. Safety Glasses

The equipment should be bought from a trusted vendor.

Personal Protective Equipment

1. Mask against mercury



2. Anti-dust mask



3. Helmet



4. Safety glasses



Questions?



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