

HELP SHEET FOR TEACHERS

Be Body Wise with Napo: Lesson One – Skin

In this lesson plan ONLY some health effects on certain parts of the body are mentioned. Many other impacts on the body can happen and will be raised in future lesson plans.

Napo in... Protect your skin!

The film raises awareness of the dangers of exposing the skin to harmful (and sometimes not so harmful) substances, the situations where exposures occur, and what can be done to avoid risks, protect the skin and prevent damage.

Napo discovers many different situations where exposure to chemicals and other substances can cause skin problems. He learns about the amazing qualities of the skin, and strips naked to show the audience: 'Everything you always wanted to know about... your skin'. He identifies measures to prevent problems and has three important messages: **Avoid – Protect – Check**.

Avoiding or minimising contact with chemicals is achieved through elimination – using a mechanical method instead of a chemical one; by substitution – using a safer alternative; and by employing a safe working distance – using tools rather than handling directly. Personal protective equipment (PPE) is designed to protect the skin but Napo reminds us of the importance of taking care of the skin by showing prompt removal of contamination, washing skin properly, drying skin thoroughly and applying skin creams regularly.

Finally Napo recommends regular checks for early signs of skin problems.

How your skin works

The skin is the most extensive organ in the human body, with a surface area of about two metres square and weighing about three kilos in adults.

Your skin is amazing! Tough, yet sensitive; permeable, yet waterproof. It's flexible, yet strong, considering that it's very thin, and houses millions of tiny units that regulate its fluid levels and temperature. It can change colour, repair itself and is your body's biggest organ.

Skin regulates body temperature; to keep it at the optimal 38 degrees Celsius (98.6 degrees Fahrenheit); it secretes sweat and then evaporates from bare skin, cooling it. Additional cooling is provided by dilation of the blood vessels in the dermis, which allows for the heat to dissipate from the blood as it is pumped through them.



To conserve body heat, the blood vessels contract, restricting blood flow. Hair follicles stand erect, causing the hair to rise, in an attempt to trap a layer of warm air close to the skin. Where the body hair is too thin to accomplish this, it results in goose flesh.

Skin also forms a physical barrier against injury and infection. The skin's sebaceous glands secrete an oil which provides an effective barrier against the growth of bacteria. When skin is dry it cracks open, allowing in bacteria and reducing its ability to ward off infection.

The skin has its own immune system, called the skin-associated lymphoid tissue (Salt), a network of immune cells that recognise and destroy foreign matter, such as bacteria and toxins.

Here's how it works:

The strike troops in the war on infection are called Langerhans cells, which are derived from bone marrow. They react immediately to any incursion by foreign matter, and then attract white blood cells such as lymphocytes and macrophages to the area. They first prevent the invaders from advancing into the body, and then destroy them.

The skin consists of three layers: the epidermis on the outside, then the dermis and the hypodermis. The skin you see is actually a layer of dead cells called the corneal layer; the final stage in a cycle that lasts around 28 days and starts below the surface in the epidermis, which comprises keratinocytes, living epidermal cells, and the corneal layer. The epidermis has a water-resistant component which prevents the skin absorbing water like a sponge.

The dermis is a busy place, almost like an industrial area. Within it operate an array of devices such as sweat and oil glands, and hair follicles, as well as a network of blood vessels and nerve fibres, some supporting tissue, collagen and subcutaneous fat. It's the elastin and collagen fibres in the dermis which provide the skin with its elasticity. The dermal layer has elastin fibres which are neatly layered and relatively thick – particularly in children and people whose skin hasn't been damaged by the sun.



Skin problems

The Napo film aims to raise awareness of the dangers of exposing the skin to harmful (and sometimes not so harmful) substances, the situations where such exposures occur, and what can be done to avoid risks, protect the skin and prevent damage.

The objective of the film is to answer the following two questions:

- What can cause skin problems?
- What measures can be taken to prevent those problems?

The answer to the first question is conveyed in a series of scenes showing different tasks and the use of materials that can typically lead to skin problems, for example:

- Construction – wet cement
- Construction – floor tiling
- Metal working fluids – using solvents to clean parts
- Motor vehicle repair – oils and lubricants
- Catering - 'wet work' – dishwashing
- Cleaning – use of cleaning products
- Hairdressing – shampooing

To answer the second question there are three key messages:

Avoid-Protect-Check

Avoid or minimise contact with chemicals that cause skin problems by showing:

- Elimination – use a mechanical method instead of a chemical one (such as using a scraper rather than a chemical stripper to remove paint)
- Substitution - use a safer alternative
- Reduce emission – enclosures, splashguards, etc
- Employ a safe working distance – handle mechanically or use tools rather than handling directly; choose tools with long handles rather than short ones

Protect your skin where you can't avoid contact; use Personal Protection Equipment (PPE) and good skin care, for example:

- PPE – use of coveralls, aprons, gloves etc.
- Skin care – where PPE isn't practical other alternatives can be used, such as prompt removal of contamination, washing skin properly, drying skin thoroughly, applying skin creams regularly

Check skin regularly for early signs of skin problems. Simple, visual checks to spot problems early mean that:

- Conditions are easier to treat
- The development of more serious problems can be prevented
- Checks preventative measures are working



The second lesson of Be Body Wise with Napo introduces risks to the back.