

Safety at Sea 2G

Every year the sea claims the lives of many folk and can turn a holiday treat, a boating adventure or a fishing trip into a tragedy. Crosses dot the rocky shore between Gordon's Bay and Hangklip, stark reminders of fishermen that have been swept to their deaths. By taking sensible safety precautions you can prevent loss of life and costly and harrowing rescue operations. Fishing is one of the most dangerous industries because fishers work with heavy moving gear on moving ships. They also work in cold, wet, slippery conditions and have to remain alert and know how to use the equipment correctly and safely. Fishers in South Africa are at extra risk because many of them cannot swim.

SAFETY TIPS

Swimming Everyone who ventures into the sea should be able to swim – South Africa as a country needs a concerted drive to make everyone water safe. Even very young babies can be made safe with suitable floatation devices and can learn to hold their breath under water. Before entering the sea swimmers should take time to watch the waves and should avoid places where there is a strong backwash, obvious rip currents or a danger of being washed onto rocks. Only enter where the waves are straight and gentle. If you experience a strong current get out of the sea, or remain well within your depth. If you are carried out to sea by a rip current do not try to swim ashore against the current – it will only tire you. Instead swim parallel to the shore and you will get out of the current and can then surf in with the waves. It is better to swim when the tide is rising as the sea will tend to wash you ashore and the backwash and rip currents are not so strong. Always heed warning notices, swim between demarcating beacons and obey lifesavers. Be considerate of other swimmers especially when surfing. Never take alcohol before swimming and avoid swimming immediately after a big meal, as there is a danger of getting cramps. Don't dive into shallow sea – there are many paraplegics who broke their necks diving into shallow pools. Don't swim in river mouths, dirty water or when bluebottles are present.

Fishing from the shore Before fishing it is important to spend time observing the sea and the waves carefully. At night always fish with a partner and look out for freak waves. On the rocks use non-skid footwear. It is best to fish when the tide is dropping as there is less danger of being washed away by an

extra large wave or being stranded by the incoming tide. In the surf be careful of strong backwashes. Always cast when it is safe to do so, and always obey fishing regulations.

Sailing The single-handed around the world yacht races encapsulate what it means to prepare for safety at sea. The sailor is pitted against the elements and relies on careful preparation, ingenuity, courage and mental and physical toughness. The sailor's preparation entails skills for navigation, sailing and boat maintenance, as well as being able to use a radio and navigation equipment and charts, read the winds and weather, and know emergency procedures. Food, water and emergency equipment, including extra sails, all have to be stowed in the best place for immediate use and be made secure. Much time and money is spent on the boat to ensure its speed, seaworthiness, safety and racing requirements. There are amazing examples of sailors surviving for days inside up-turned hulls in the Southern Ocean because they kept their heads, had suitable clothing and used their emergency equipment to call for help and keep alive. The size of the ocean is brought home in stark reality during these rescue operations for it can take days for a plane to locate a missing boat. Then the sailor still has to wait for a boat to come to his rescue – often the nearest is another competitor in the race.

Pleasure cruisers and day-trippers are often in much more danger because they become casual about maintenance and safety procedures. Their crews are inexperienced and they may be caught unawares by sudden weather changes or a person overboard. Skippers should always obtain permission to sail offshore and file a cruise plan.

Surfing, paddleskiing and sailboarding Always keep well away from bathing areas, wear a wetsuit and go out with a buddy. Know your limitations and master the skills of wind-surfing in enclosed waters and estuaries before entering the sea. There is always a danger of being blown offshore and suffering from exhaustion.

Diving and snorkelling Never dive alone! Don't use earplugs or dive when you have a cold. When snorkelling from the shore select a safe spot for entering and leaving the water before setting off, as this is often the most dangerous

Drugs and alcohol are major factors resulting in drowning along the South African coast. We must be alert and recognise the sea as a dynamic environment demanding our respect, if we are to enjoy and benefit from the sea's many resources.

Everyone, especially parents, teachers, life savers, fishers and even children should know how to apply artificial resuscitation (CPR) for victims of drowning.

part of the dive. Time the waves carefully so that you are not bashed against the rocks when you clamber ashore in ungainly flippers.

Safety afloat – Basic rules for safe boating

- Consult others about local conditions and check the weather forecast and sea conditions
- Operate with care, courtesy and common sense – never take chances
- Carry proper equipment and know how to use it
- Maintain the boat and equipment in good condition
- Always keep your boat under complete control
- Never overload your boat
- Use up-to-date charts
- Trim your craft and adjust speed to suit the conditions
- Know the emergency signals and boating regulations
- The skipper should have a skipper's certificate and should know his own and the crew's capabilities and limitations

Safety equipment for small boats Small boats, inflatables and yachts require specific safety equipment and are restricted to maximum distances from the shore according to their size and engine power. Apart from suitable buoyancy, engine size and sufficient fuel for the intended voyage plus 25%, the essential equipment includes:

- A life jacket for each person (close at hand)
- Distress flares (stored in a waterproof container)
- For signalling: a mirror, a waterproof torch, spare batteries, a spare bulb and a sound device
- Compass
- Bailing device
- Paddles or oars
- Grabline
- Anchors and ropes
- Knife
- Survival blanket ('space' blanket) for each person on board
- Identification sheet of highly visible material (orange plastic with the boat's name) – for identification from the air, that can also be converted into a makeshift sail or sea anchor
- First aid kit (including bandages, plaster, antiseptic ointment, seasickness pills approved for diving and sunburn lotion)
- Fresh water and food
- Tool kit suitable for the boat
- Air-bellows for inflatable boats
- Radio (in larger boats)

Launching through the surf Launching a boat through the surf is a tricky affair requiring great skill and experience in boat handling. Waves of two metres or more should be treated with extreme caution – don't launch if in doubt. The crew should know exactly what is expected of them. All equipment should

be tied down and the hatch covers secured. Holding the bows facing the surf is essential in beach launching and the boat must be deep enough so that the motors can function without hitting the bottom. The skipper waits for a lull between waves, the crew scrambles aboard and the boat surges forward at just the right speed. Hitting the wave at high speed could result in extensive damage or flip the boat over backwards. If, however, the speed is too slow the boat could be swamped or swept sideways and capsize.

On returning to the beach, with the weight far back in the boat, the successful skipper checks for a clear path and times the run to follow a bigger swell in, remaining a comfortable distance behind it.

Man overboard Quick reactions to a man overboard accident can greatly reduce the dangers of injury. Turn towards the side which the victim has fallen over to reduce the chance of hitting him with the propellers. A lookout should be kept at all times on the victim. Approach slowly alongside. If the victim is not found within a minute or two a buoy marker should be dropped to fix the last seen position.

Capsized boat In the case of a capsized boat, if possible, right the boat and bail. If the boat cannot be righted, stay with the boat. It should float and is easier for rescuers to find than a lone swimmer. Try to get out of the water on top of the hull to keep as warm as possible. Swimming to shore can be a deadly decision.

Exposure and hypothermia When divers and sailors set off on a boat they nearly always have to contend with cold and wet conditions. It is necessary to wear suitable clothing and take along high-energy foods, such as chocolate, and hot sweet drinks. Symptoms of exposure are shivering and physical and mental slowing down. Hypothermia sets in when the body is unable to conserve the metabolic heat it produces and the core temperature of the body drops. Severe hypothermia can lead to death. Keep the patient still, and cover the head and shoulders. Remove wet clothes (but not a wetsuit) and wrap the patient in blankets or a waterproof sheet. If conscious give warm sweet drinks.

Author: Margo Branch September 2000

FURTHER INFORMATION: • National Sea Rescue Institute of South Africa, P O Box 6085 Roggebaai 8012. 23 stations around the country.
• South African Navy, Tokai, Cape, Town. (For charts, signal, tide-tables, light fog and radio signals etc. • Esterhuysen, K. 1992. South African small craft boatmanship. S A Underwater Union, Box 557 Parow, S Africa. • Kayle, A. 1996. How to manage diving problems. Penguin books, Johannesburg, S Africa.
• Kayle, A. 1996 Safe diving A medical handbook for Scuba divers. Penguin Books, Johannesburg, S. Africa.

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Food Value of Fish 2G

Worldwide, men, women and children eat more fish than any other type of animal protein. It is estimated that between 15 and 20 percent of all animal proteins come from aquatic animals. Fish is highly nutritious and serves as a valuable supplement in diets that lack essential vitamins and minerals.

Fish provides high quality protein, vitamins A and D, phosphorus, magnesium and selenium. Iodine is present in marine fish. Fish protein – like that of meat – is easily digestible and favourably complements dietary protein provided by cereals and legumes that are typically consumed in many developing countries.

Experts agree that, even in small quantities, fish can have a significant positive impact in improving the quality of dietary protein by complementing the essential amino acids that are often present in low quantities in vegetable-based diets. But recent research shows that fish is much more than just an alternative source of animal protein. Fish oils in fatty fish are the richest source of a type of fat that is vital to normal brain development in unborn babies and infants. Without adequate amounts of these fatty acids, normal brain development does not take place.

Closely spaced pregnancies, often seen in developing countries, can lead to the depletion of the mother's supply of essential fatty acids, leaving younger siblings deprived of this vital nutrient at a crucial stage in their growth. This makes fatty fish such as tuna, mackerel and sardine – all of which are commonly available in developing countries – a particularly good choice for the diet of pregnant and lactating women.

A vital food source for developing countries

Figures for 1995 show that while fish provide slightly over 7% of animal protein in North and Central America and more than 9% in Europe, in Africa they provide over 17%, in Asia over 26%, and in the low-income food-deficit countries, including China, they provide nearly 22%.

The world's oceans, lakes and rivers are harvested by artisanal fishers whose catches provide vital nourishment for poor communities, not only in Africa and Asia, but also in many parts of Latin America and islands in the Pacific and Indian Oceans. Of the 30 countries most dependent on fish as a source of protein, all but four are in the developing world.

Not only is fish a vital food, it is also a source of work and money for millions of people around the globe. In 1996, an estimated 30 million men and women were deriving an income from fisheries. An overwhelming majority of them – some 95% – were in developing countries. In South Africa fisheries annually contribute approximately R2 billion to the



national economy. Some 28 000 people living in the coastal provinces are directly employed by the fishing industry, while another 60 000 people find employment in related sectors.

The developing countries are also taking a growing share of the international trade in fish and fishery products. This may have both benefits and drawbacks. While the exports earn them valuable foreign exchange, the diversion of fish and fish products from local communities and developing regions can deprive needy people, including children, of a traditionally cheap, but highly nutritious, food.

Fish as a food for animals and plants

Fishmeal contains valuable proteins, minerals and vitamins and is an ideal foodstuff for domestic animals such as chickens and pigs. Farmers also use fishmeal and seaweeds to fertilize their crops.

The amount of fish used for reduction to meal and oil totalled 29 million tonnes in 1997. Fish utilized as raw material for the production of animal feed represented one quarter of total fishery production in 1997; however, since the fish utilized for reduction to meal are almost entirely from natural stocks of small pelagics, the production of fishmeal actually accounted for nearly one third of the total capture fisheries production.

Who eats fish?

Asia, which combines a relatively high per capita consumption with large populations, is by far the most important fish-eating region. Europe is the second largest fish-eating continent. Fish consumption is generally higher in developed countries than in developing countries but notable exceptions are small developing island states. The lowest levels of consumption occur in Africa and the Near East.

In many developing countries the average per capita consumption may be low, but fish is often a staple food in

coastal areas and an important source of protein among the poor. The demand for fish for food is expected to continue growing. It is estimated that by the year 2010, the demand for fish could reach a level of 120 million tonnes per year, a substantial increase over the 75 million to 85 million tonnes consumed annually during the mid-1990s.

Slightly above two thirds of the global fishery production (or 93 million tonnes) were utilized for direct human consumption in 1997; nearly half of which was consumed in fresh/chilled form and a further 30% as frozen product. The remaining 25% was salted, dried, smoked or canned. In recent years the volume of fishery products marketed in their fresh state has increased, as has that of frozen fish. The amount of finfish being consumed has declined, while the consumption of crustaceans, molluscs and cephalopods has increased.

On average capture fishery production supplied 10.9 kg (in live weight equivalent) per person and aquaculture 4.9 kg per person; their combined nutritional contribution accounted for one-sixth of the animal protein intake.

In 1997 Norway was the leading exporter of fish (US\$ 3.4 billion worth of fish trade) contributing 7% of the total world value. Japan imported US\$ 15.5 billion worth of fish and fishery products, accounting for 30% of the world total. US imports (US\$ 8.1 billion) accounted for 14% of the total.

Every night almost 800 million people in the developing world go to sleep hungry. That is more than the combined population of Europe and North America. In general, people living in developing countries are much more dependent on fish as part of their daily diets than those living in the developed world.

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FURTHER INFORMATION:

- Food and Agriculture Organisation of the United Nations <http://www.fao.org>
- CSIR – Foodtek: Fishing Industry Research Programme, 15 Lower Hope St, Rosebank 7700. Tel (021) 689-9341 Fax: (021) 686-6116

RELATED FACTSHEETS:

- Ocean Delicacies • The South African Fishing Industry • Demersal Fishing • Future Use of the Sea • Pelagic Fishing



Seafood Delicacies 2G

Human beings consume around 90 million tons of fish products every year and a burgeoning demand for seafood has led to a massive growth in world fishery production. In South Africa rural coastal communities subsist on all edible seafoods especially fish, shellfish and even redbait. The rest of the people are only moderate fish eaters, but rock lobster, calamari, abalone, and other shellfish are becoming more popular. Listed here are some of the seafood delicacies that are enjoyed around the world.

Lobster is one of the most expensive seafoods in the world, but it hasn't always enjoyed this status. In the 1800s lobster was considered 'poor man's food' and was eaten many times a week by early American settlers. Lobsters were even used as fertilizer on potato crops. Lobster is fished around the world, with the largest catches coming from Canada, the USA, the Caribbean and the tropics. The common lobster, *Homarus vulgaris*, is widely found from north of the UK to the Mediterranean. On the opposite side of the Atlantic lives its cousin *Homarus americanus*. The rock lobsters that occur in South African waters do not have the large, crushing claws of a true lobster but these species still fetch a high price on local and overseas markets.

Tuna is one of the most important internationally traded seafood commodities. Recent estimates put the annual value of the fresh and frozen tuna trade at just over US\$ 3.3 billion and the canned tuna trade at US\$1.8 billion. Japan is the leading producer of tuna and has been for the past 50 years. However, its annual catches from the Atlantic, Indian and Pacific oceans have been steadily declining since 1993, despite increased fishing effort and improved catching methods. The most popular tuna species in Japan is skipjack tuna which is made

into a wide variety of fish products such as fish sausage and dried tuna. Bigeye tuna and yellowfin are next in order of volume purchased. Bluefin tuna is probably the most desired species in Japan. It is also the most expensive and least available. The United States dominates world consumption of canned tuna by a large margin, consuming over 2 billion cans per year.

Shrimp accounts for 20 percent of the global trade in seafood. China is the world's top shrimp producer, followed by Indonesia and Thailand. The United States is the world's largest producer of frozen shrimp, while Thailand produces 38 percent of the world's prepared and preserved shrimp (such as canned shrimp). The main shrimp species produced in 1997 was the giant tiger prawn (*Penaeus monodon*), supplies of which were mostly produced by aquaculture. Prices for shrimp range from about R60 to R120 per kg, depending on quality, availability and market conditions.

Sturgeon roe or **caviar** is acknowledged to be one of the most sophisticated foods in the world and fetches exorbitant prices. The largest beluga sturgeons – four metre-long females weighing 585 kg – carry 90 kg of roe that a US caviar retailer can sell for R1.5 million! Belugas and the smaller Russian sturgeon and stellate sturgeon make up most of the Caspian sturgeon harvest, which provides 90% of world caviar supplies. Caviar is, however, not strictly seafood. Sturgeons originate in the Caspian Sea which, although it is called a sea, is actually landlocked and the largest lake on earth. Sturgeon populations and the world's caviar supply are threatened by water pollution, over-harvesting and poaching.

Aquaculture accounts for 83 percent of the world's supplies of bivalve molluscs such as **mussels, oysters and scallops**. In South Africa Mediterranean mussels *Mytilus galloprovincialis* are grown on ropes which are suspended from rafts in sheltered bays like Saldanha. The cultivation of oysters takes place mainly in the Knysna lagoon where the Pacific oyster, *Crassostrea gigas*, is grown in mesh bags that are suspended from wooden racks. *C. gigas* is the most commonly cultivated oyster species



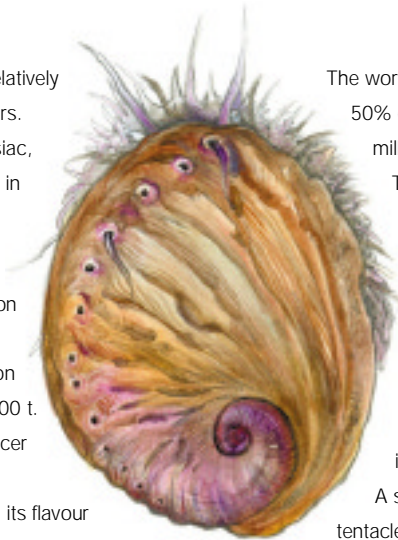
Rock lobsters, calamari and mussels are popular seafoods

in the world; it is favoured because it grows relatively quickly, reaching an edible size within two years. Oysters have legendary status as an aphrodisiac, so much so that an advertisement for oysters in the USA reads: "Forget Viagra, eat Brady's oysters"!

Scallops are dredged or farmed using suspension culture. During 1997 demand for this seafood delicacy rose significantly and world production of scallops jumped from 800 000 t to 1 750 000 t. China is the world's number one scallop producer and is responsible for more than 80% of total production. Scallop meat is nearly translucent, its flavour is sweet, ranging from mild to salty.

Abalone, or perlemoen as it is known in South Africa, is considered a delicacy in the Far East, especially in Japan where live South African abalone, *Haliotis midae*, fetch between R180 and R240 per kg. *H. midae* is highly prized in the Far East because its dark, grey flesh bears a strong resemblance to Japanese abalone. Abalone are slow growing animals that are easily harvested from relatively shallow water; as a result, abalone fisheries around the world have proved difficult to manage and many have collapsed. Today abalone farms in California, Australia, New Zealand and, more recently, South Africa, produce live abalone which are sold, in the shell, at sizes between 10 and 15 cm.

In Japan, **sea urchin roe** or 'uni' is a delicacy: red sea urchins are cracked and the gonad or "roe" is hand-packed into wooden trays and airshipped to Japan where the auction price may be as high as R1 200 per kg. These spiny echinoderms were once considered pests in California where they were blamed for decimating kelp beds. Today they are the coastal state's largest fishery. An experiment to test the viability of harvesting the Cape urchin, *Parechinus angulosus*, north of Cape Town was carried out in the mid-1990s. The project showed that on the west coast, urchin roe yields were too low to sustain a commercial harvest. On the south coast yields were acceptable, but no harvesting is permitted on this coast because of the vital role that sea urchins play in the life-cycle of the abalone: juvenile abalone are known to shelter under sea urchins during the period of their lives when they are most vulnerable to predators.



The world catch of **cephalopods** has risen by 50% during the past decade, exceeding 3 million tonnes for the first time in 1996.

The main markets for cephalopods, such as squid, octopus and cuttlefish, are in Asia and the European countries with a Mediterranean coastline. Squid is very popular in China where it is bought either fresh or dried. In Mediterranean countries ready-made products such as squid rings covered in batter or breadcrumbs are popular.

A squid burger, which is produced from tentacles and fins, is being marketed in Europe.

The cannonball **jellyfish** (*Stomolophus meleagris*) is grown in Florida and exported to Korea, Japan and Taiwan. Processing takes 27 days and 45 kg of live jellyfish is reduced to 8 kg of salted product. The jellyfish is used in an old Chinese dish called Feng Shan Shui Hei (Lucky Raw Fish) which is traditionally eaten at Chinese New Year. The dish is enjoying a revival in China thanks to the efforts of American jellyfish growers.

A taste for sushi

The Japanese capacity for seafood is legendary. People in this tiny country consume about 1 million tons of tuna per year, eating much of it raw with 'sticky rice' in the form of sushi – a seafood delicacy.

Legend has it that the culinary form, sushi, developed some 1 200 years ago, when the Emperor Keiki was delighted by a meal of raw mussels in vinegar. Today there are several thousand types of sushi specialities and sushi is eaten and enjoyed all over the world. Only raw fish can be used for sushi. The simplest form of sushi is sashimi; selected pieces of raw fish cut into appetising cubes. Nigiri-zushi requires a little more preparation: wafer-thin pieces of raw fish are brushed with green Japanese horseradish – wasabi – and wrapped over cold rolls of sticky rice. Maki-zushi is prepared by cutting a long, thin strip of fish flesh, rolling it in a coat of rice and then covering it with a seaweed leaf called nori.

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FURTHER INFORMATION: • Food and Agriculture Organisation of the United Nations <http://www.fao.org>
• CSIR – Foodtek: Fishing Industry Research Programme 15 Lower Hope St, Rosebank 7700. Tel (021) 689-9341 Fax: (021) 686-6116

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Sunburn 2G

Sunburn is caused by exposure to ultraviolet radiation in the sun's rays. Ultraviolet light burns the cells in the skin and breaks them down. This allows increased blood into the area, and increased fluid into the cells, which causes redness, swelling, pain and, in severe cases, blistering. The skin usually repairs some of the damage caused by sunburn, but invisible permanent cell damage remains. The repaired skin has a thicker upper layer and the formation of the pigment melanin is stimulated so that a tan develops. The top layer of dead skin cells is often lost after sunburn, through a process which we know as "peeling".

What is ultraviolet radiation?

The sun releases energy in the form of waves or rays – called radiation. This energy is classified along a spectrum of wavelengths that range from very short cosmic waves to very long radio waves and beyond. Sunlight is made up of a variety of rays such as heat, infrared rays, visible light, gamma rays, X-rays and ultraviolet rays. Ultraviolet rays have the most damaging effect on the skin.

There are three types of ultraviolet rays: UVA, UVB and UVC. The chief cause of sunburn and skin cancer is UVB radiation; it is estimated that 80% of all damage resulting from sunlight is due to exposure to UVB rays. Long-term exposure to UVB can cause skin to become thick and leathery, a condition which is known as hyperproliferation. UVB rays are also capable of directly damaging the DNA of the skin that can lead to skin cancer.

UVA rays have a lower energy than UVB rays but they penetrate deeper into the skin. About 50% of UVA rays pass through the epidermis and reach into the connective tissue of the dermis – therefore mainly causing premature ageing. UVA can have negative effects on the lens of the eye and can contribute to the development of skin cancer.

UVC rays never reach the earth's surface as they are filtered out by the ozone layer and the atmosphere.

What are the dangers of exposure to UV?

Quite apart from the pain and discomfort of sunburn, there are many later effects of exposing the skin to the sun:

- Sunburn appears to inflict considerable damage on the **melanocytes** which, under graduated sun exposure, are responsible for producing the pigment in the skin to form a

tan. When melanocytes or tanning cells are permanently damaged, small, white, circular areas called 'white freckles' may form, or there may simply be an uneven pigmentation of the skin.

- Other cells in the skin are also injured by ultraviolet rays. The Langerhans cells are part of the skin's immune system and protect against the formation of skin malignancies. Areas of the body which have been subject to recurrent sunburn or strong sun exposure over the years are known to have a reduction in Langerhans cell numbers. This indicates reduced ability to withstand the formation of **skin cancers**.
- **Melanoma** is the most common of the skin cancers. It can have the appearance of a new spot or freckle, birthmark or mole which changes in shape, colour or thickness over a period of months. Melanomas can occur from adolescence onwards and are most common between 30 and 50 years of age. A melanoma can spread to other parts of the body and form metastases or secondary cancers. Recent research has suggested there may be a link between sunburn during childhood and subsequent melanoma in adulthood.
- Part of the skin's normal response to sun exposure is for the upper layer (stratum corneum) to thicken. After years of continuous exposure to the sun the skin becomes abnormally thick in patches. This condition is known as **solar keratosis**. In Australia around 50% of people over 40 have some solar keratosis. Figures for South Africa are not available but are likely to be equally high. Solar keratosis is usually the first

Full-body swim suits provide protection from the sun



sign that the skin has “had enough” sun. Solar keratosis is not skin cancer itself, but studies have shown that squamous cell cancers can arise from areas of solar keratosis.

- All skins age, but some age more rapidly than others. Stress, diet, smoking and a dry climate all contribute to **premature skin ageing**, but the major cause is sun exposure. A good example of skin ageing due to sun exposure is to compare the back of the hand with the inside of the forearm, in a person who is past his/her mid thirties. There is a distinct difference in wrinkling.
- Like the skin, **the eye** is affected by ultraviolet radiation. One of the effects that ultraviolet radiation has on the eye is the formation of a ‘cataract’; an opacity which, over a number of years, develops in the lens of the eye. Cataracts have been found to be related to ultraviolet exposure as well as to ageing. Ultraviolet radiation may also cause degeneration of the collagen fibres in the inner part of the white of the eye. With time, these may take on a fleshy look and may cover the central triangular white of the eye, a condition called a *pterygium*. When a *pterygium* starts to encroach on the cornea it has to be surgically removed.

Prevention is better than cure

In the long-term the best way to prevent premature skin ageing is to stop the sun from reaching the skin, either by staying out of the sun, wearing protective clothing or by the use of an effective sunscreen.

- Get into the habit of applying sunfilter before you go into the sun. Remember that a uniform thickness of sunfilter is important and that it can easily be rubbed or washed off during the day’s activities. Reapplication every two to three hours is important as the thickness of the filtering agent determines its effectiveness.
- Clothing such as long sleeves, long trousers and a good hat are practical and economical protection.
- Remember that children’s skin is more sensitive than an adult’s so care must be taken to prevent damage to the child’s skin by early sun exposure. Never leave your baby in a hot car. UVA can penetrate glass but UVB comes through open windows.

- Drivers are at risk of skin cancers, particularly on the right cheek and temple. Lips and the backs of hands are particularly vulnerable so protective clothing, sunscreens and hats are also important while travelling in cars.
- The best way of protecting both eyes and the eyelids is with a pair of sunglasses that absorbs ultraviolet radiation.
- Full-body suits in special UV-protective cloth are worn by swimmers in tropical regions and should be encouraged as the fashion for children’s swim wear.

Ozone and sunburn

Ozone is a blueish gas made of oxygen atoms. In the atmosphere there is a layer of ozone which is largely concentrated in the stratosphere especially between altitudes of 20 and 30 km. The ozone in the stratosphere protects the earth, including ourselves, from ultraviolet radiation.

In 1985 British scientists announced that they had discovered a 30% decrease in the amount of ozone over the Antarctic. What came to be known as the “ozone hole” was thought to have been caused by increased use of chloro-fluorocarbons (CFCs), which are commonly found in refrigerants and foaming agents. A wide range of effects was expected – among them an increase in skin cancers, damage to crops and animals and changes in world weather patterns. It was estimated that if levels of ozone dropped to half the normal level as they do over Antarctica, some sunbathers would find their skin peeling after just a quarter of an hour in the sun. The ozone layer is particularly thin in southern Chile.

Since 1987 the United Nations has convened a series of conferences in an effort to reduce the release of CFCs by the world’s major producing and consuming nations. Yet residues of these substances will continue to damage the ozone layer for many years until they are eliminated. Attention is now turning to the ozone damaging effects of oxides of nitrogen (Nox) from jet aircraft and new engines must generate less Nox.

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FURTHER INFORMATION:

- Cancer Association of South Africa, Cancer information services.
PO Box 186, Rondebosch 7700. Tel: (021) 689-5347 Fax: (021) 689-1840. Toll-free: 0800-226622 <http://www.cansa.org.za>

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