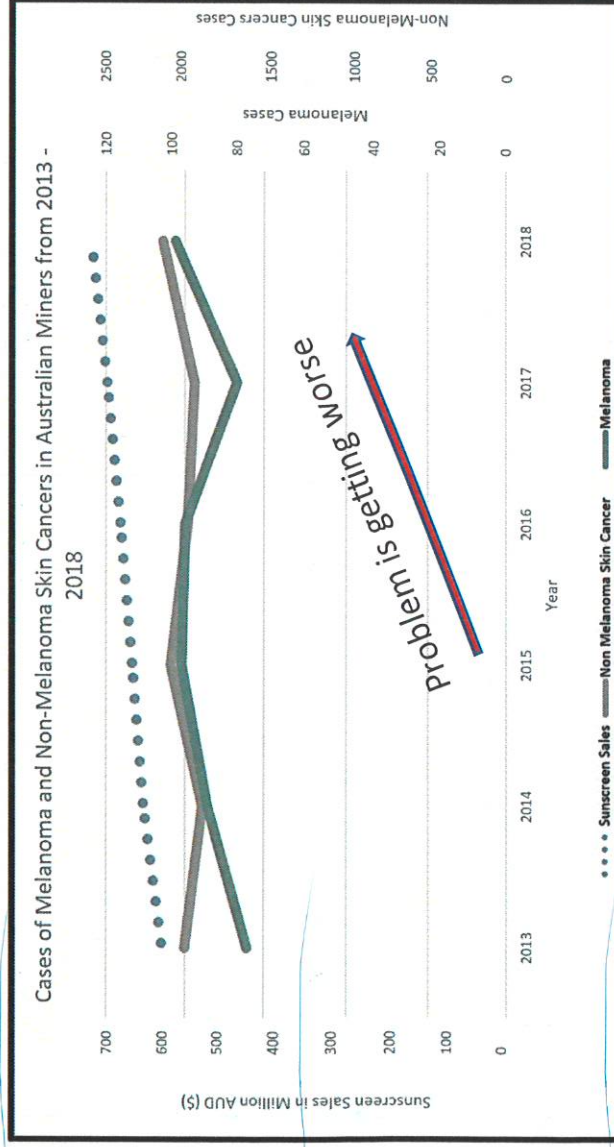


Urgent Action Needed to Save 90+ Miners per Year

The FDA (US Government Watchdog) classifies only Zinc Oxide and Titanium Dioxide as Safe and Effective in Sunscreen (2019)

FACTS

- In 2018 Miner melanoma deaths stood at 8 versus 11 of the general population.
- Exposure to chemicals used in mining can break down the chemical UV filters present in sunscreens, reducing their protection
- Chemical Sunscreens can have anti-inflammatory effects that hide signs of sun damage like redness or inflammation, making it harder to know when burnt and to seek shade or reapply sunscreen.



In 6 Years to 2018 Australians Sunscreen Spend was **up 94.4%**, \$625.2 Million p.a., Skin Cancers in Miners were 2,141 (**up 6.9%**), Melanomas in Miners in 2018 were 99 (**up 28.57%**) & the estimated number of melanoma deaths, based on the death rate percentage, were 8 (vs 11 for general population).

<https://www.safeworkaustralia.gov.au/data-and-research/work-related-fatalities/work-related-tumours/melanoma-skin-cancer-in-australia>
Retrieved from <https://www.ahw.gov.au/reports/cancer/cancer-in-australia/content/cancer-mortality-by-age-and-sex>
https://www.cancer.gov/types/skin/skin_cancer_incidence_and_mortality

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Year	Miner Melanoma Death Rate	All Other Mining related deaths
2013	5	9
2014	3	11
2015	3	11
2016	2	6
2017	3	3
2018	8	9

<https://www.aihw.gov.au/reports/cancer/cancer-data-in-australia/contents/cancer-summary-data-visualisation>
<https://www.aihw.gov.au/reports/cancer/skin-cancer-in-australia/contents/table-of-contents>
<https://www.cancer.org.au/about-cancer/types-of-cancer/skin-cancer/non-melanoma-skin-cancer-statistics.html>

SOLUTIONS

- Ban the use of Chemical Filter based sunscreens that lose effectiveness in contact with common Mining chemicals
- Supply SPF50 rated protective clothing, hats & glasses
- Provide shade during mining work &/or sufficient breaks in areas sufficiently shaded
- Require the use of physical, mineral sunscreens on all mining sites, free from chemical UV filters

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8955451/>

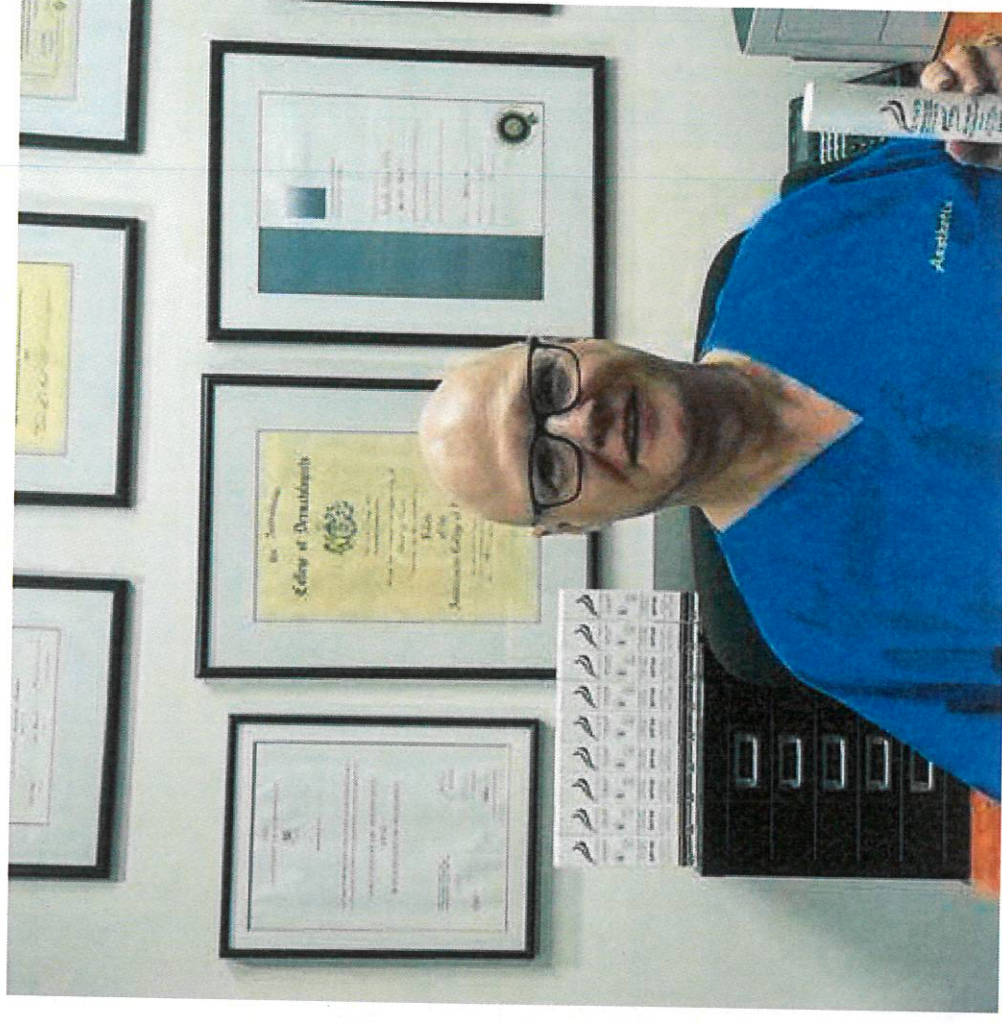
Dr Russell Hills – Sunscreen Safety Basics

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The recent contamination of some chemical sunscreens (available in Australia) with Benzene (a carcinogen) in the manufacturing process cannot occur in the production of Zinc Oxide sunscreen.

A recent study suggests that chemical sunscreens are absorbed in much higher concentrations than previously thought. This is not to suggest that they should not be used but further studies need to be undertaken in this area.

Although published studies suggest that several chemical sunscreens also interact with human sex or thyroid hormones, there is not enough information at present to determine the potential risks to humans from hormone disruption.



Banned & Proposed to be Banned Chemical Sunscreen Filters

	Octinoxate	Avobenzone (BP-3)	Oxybenzone (BP-3)	Methylbenzylidene Camphor	*Homosalate	*Octocrylene	*Methylparabens	Phenoxy- ethanol	*Octisalate	Ensilazole	Meradimate	Padimate O	Sulisobenzon e (BP-4)	Dioxybenzone (BP-8)
USA				✗					✗					
Hawaii	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗		✗	✗	✗
S. Virgin Islands			✗	✗		✗	✗							
Japan		✗	✗	✗	✗				✗	✗	✗	✗		✗
Sweden			✗						✗		✗	✗		
Future Serbia Ecuador	✗	✗	✗	✗	✗	✗								✗
Uganda			✗											
Marshall Islands	✗	✗	✗	✗	✗	✗								✗
Maldives	✗		✗								✗			
Maldives	✗		✗	✗		✗	✗	✗						



Active ingredients:

✗ Homosalate 10% w/w,

✗ Octocrylene 8% w/w,

✗ Octyl Salicylate 5% w/w,

✗ Butyl Methoxydibenzoylmethane 4% w/w

Reaction of Chemical Sunscreens with Swimming Pools

Public pools should take steps to reduce contaminants that can react with chlorine (e.g. Sunscreen & Cosmetics). Water quality guidelines for public aquatic facilities - State of Queensland (Queensland Health), December 2019

Chlorine in swimming pools can react with certain chemicals found in sunscreens particularly those that contain organic compounds such as avobenzene, octocrylene, and oxybenzone. These reactions can lead to the degradation of the sunscreen, reducing its effectiveness in protecting the skin from the sun's harmful UV rays [55].

The breakdown of chemical sunscreens in swimming pools can potentially affect children in several ways:

- Skin Irritation: Chemical sunscreens break down in chlorine to produce new compounds that may irritate the skin. This can cause discomfort, itching, redness and in some cases, may lead to allergic reactions [56].
- Respiratory problems: When chemical sunscreens break down in chlorine, volatile organic compounds (VOCs) can irritate the respiratory system and may cause symptoms such as coughing, wheezing, and shortness or breath[56,57].

[Water quality guidelines for public aquatic facilities \(health.qld.gov.au\)](http://health.qld.gov.au)

Harmful Effects of Chemical Sunscreen UV Filters

Chemical UV Filter	Hormone Disruption	Reproductive & Developmental Toxicity	Systemic Absorption & Accumulation	Photo-Contact Allergy & Dermatitis	Nervous System Effects
Oxybenzone (Bp-3)	✗	✗	✗		
Octinoxate	✗	✗	✗	✗	
Homosalate	✗		✗		
Phenoxyethanol				✗	✗
Methylparabens	✗	✗			
Methylbenzylidene Camphor	✗	✗		✗	
Octocrylene			✗	✗	
Sulisobenzene (Bp-4)	✗	✗	✗		
Cinoxate	✗	✗			
Dioxybenzone (Bp-8)	✗	✗	✗		
Octisalate		✗	✗	✗	
Ensulizole	✗	✗			
Meradimate	✗			✗	
Padimate O				✗	

Zinc Oxide is GOOD

Zinc oxide is the only broad-spectrum UV Filter considered safe and effective (GRASE) by the FDA.

• UVA/UVB/UVC & Blue Light Broad Spectrum

- "Of the available sunscreens only zinc oxide provides effective protection across the UV band range of 240 to 400 nm, covering UCV (240 to 280 nm), UVB (280 – 320nm), UVA 2 (320 to 340 nm), and UVA 1 (340 to 400 nm)."[9]
- "UVA rays account for 95% of our sun exposure. They cause skin aging and contribute to skin cancer."
- "UVA rays penetrate deeply into the skin layers, damaging collagen and cells which leads to wrinkling, hyperpigmentation and loss of elasticity." [10]

• Zinc Oxide Safety

- Considered Safe and Effective by the FDA (US Government), Zinc Oxide is the only Sunscreen Active Ingredient with no usage limit set by the TGA.
- "A new study led by two Australian universities has found evidence that zinc oxide nanoparticles used in sunscreen does not cause cellular toxicity even after repeated applications." [11]
- "Zinc Oxide is considered safe for infants by the FDA and is even present at up to 40% in nappy rash creams" FDA's release published 24/08/2021

• Zinc Anti-Bacterial & Wound Healing

- "Zinc has been used during the regime of Pharaohs, and historical records show that Zinc Oxide was used in many ointments for the treatment of injuries and oils even in 2000BC." [12]
- "Of all natural and synthetic wound dressing materials, the chitosan hydrogel microporous bandages laced with zinc oxide nanoparticles developed by Kumar Etal are highly effective in treating burns, wounds and diabetic foot ulcers." [12]

• Hypoallergenic

- "A study in Denmark, 56.7% of women (3,288,600 million) and 33.6% of men (1,948,800 million) in Denmark have experienced an adverse effect after using cosmetics at least once." [13]
- "In a study in which a 25% zinc oxide patch (2.9mg/cm²) was placed on human skin for 48 hours, there was no evidence of dermal irritation."



WorkSafe qld.gov.au

Slop on sunscreen

- reapplying at least every two hours
- using zinc cream for lips, ears and nose for extra protection
- selecting a gel-based or alcohol-based sunscreen when handling tools
- using a clear lip balm with sunscreen and applying it regularly.