

# Back from the brink?: Nuclear risks – and what to do about them...



Scientists  
for Global  
Responsibility

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<http://www.sgr.org.uk/>

<https://www.sgr.org.uk/projects/nuclear-weapons-threat-main-outputs>

## 90 minutes to midnight

The Doomsday Clock was created in 1947 for the *Bulletin of the Atomic Scientists* as a powerful symbol of the likelihood of a human-made global catastrophe caused by nuclear weapons. Nowadays, including environmental and technological threats.

For many Cold War years clock set to several minutes before midnight.

### 2023 is judged to be the most dangerous in humanity's history

- the clock set at only 90 minutes to midnight.

#### Reasons ...

- ❑ a new heightened risk of nuclear war;
  - ❑ a growing climate emergency;
- ❑ political systems riven with dangerous and deliberate misinformation;
- ❑ continued destruction of the natural world with ideal conditions for the emergence of new dangerous viruses and pathogens such as COVID-19, bird flu, and Ebola;
  - ❑ (not to mention exceeding several planetary survival boundaries)
- ❑ the technical ability to deliberately create even more lethal pathogens.

## Risks posed by existence of nuclear weapons.

### 1. Extremely damaging when not used

1. Create fear and uncertainty – make crises more dangerous
2. Serious nuclear misses average every 3 years
3. We have avoided nuclear holocaust for 70 years
4. Do we feel lucky for another 70?
5. Misleading use of language – ‘nukespeak’
6. Terms such as ‘Minimum nuclear deterrent’ or ‘nuclear umbrella’
7. UK NW are no umbrella nor minimum - unstoppable mega death threat

### 2. Nuclear ‘deterrence’ – highly misleading & slippery concept

1. Cannot deter accidents, equipment failure, makes false alarm worse
2. Create false sense of security – underfunding of usable defences
3. Nuclear war cannot be ‘won’. Use means everyone loses.

## The extreme impacts of nuclear weapon use

### 3. Designed to be extremely destructive when detonated

1. **One weapon:**
2. **Terrible immediate deaths & injuries: intense heat, blast, fallout**
3. **Destruction equivalent to months of artillery shelling in a few seconds**
4. **Medical facilities overwhelmed. Humanitarian assistance impossible**
  
5. **Regional nuclear war:**
6. **100 Hiroshima size weapons - hundreds of millions killed, injured.**
7. **Terrible long-term impacts – 10 year nuclear winter. 2bn at risk.**
  
8. **Global nuclear war:**
9. **2000 – 4000 warheads - mainly USA & Russia**
10. **Hundreds of millions to over a billion killed and injured**
11. **Radioactive fallout over large areas - especially from nuclear reactors**
12. **Even worse long term nuclear winter, ozone destruction, ecocide**
13. **'civilisation' at risk**

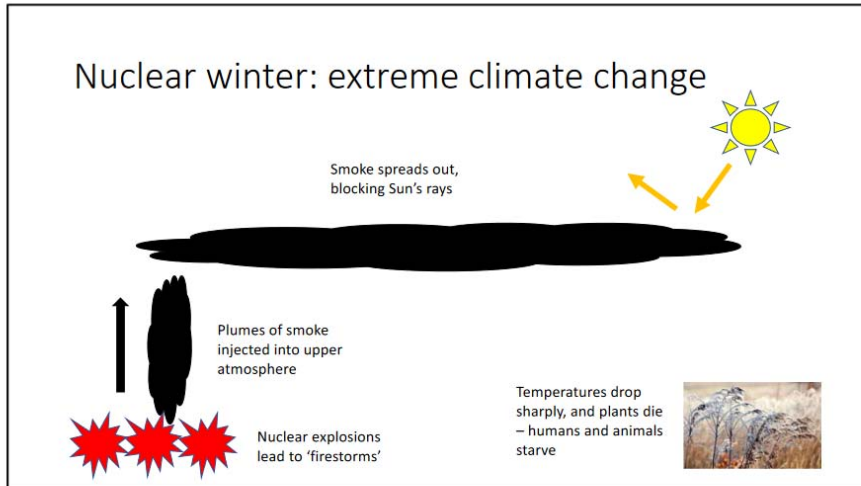
EMP - electro-magnetic pulse - added In response to a question from the audience – an intense burst of electronic radiation when the warhead detonates, capable of wrecking any sensitive electronic equipment. This may include car ignition circuitry (ie cars may not work). Mobile phones and mobile phone masts. All electrical networks. After a nuclear detonation and especially if several, one should assume that there will be no internet, no mobile system and that water and electrical supplies will fail. EMP from a high altitude nuclear detonation would affect all of Europe.

Even a 10kt warhead could breach a reactor core and create a huge 200-700km 100year exclusion zone.

<https://www.sgr.org.uk/resources/could-terrorists-turn-uk-nuclear-wasteland>

<https://inews.co.uk/news/world/ukraine-war-nuclear-risk-russia-missiles-accidental-hits-reactors-1478269>

## Nuclear winter: extreme climate change

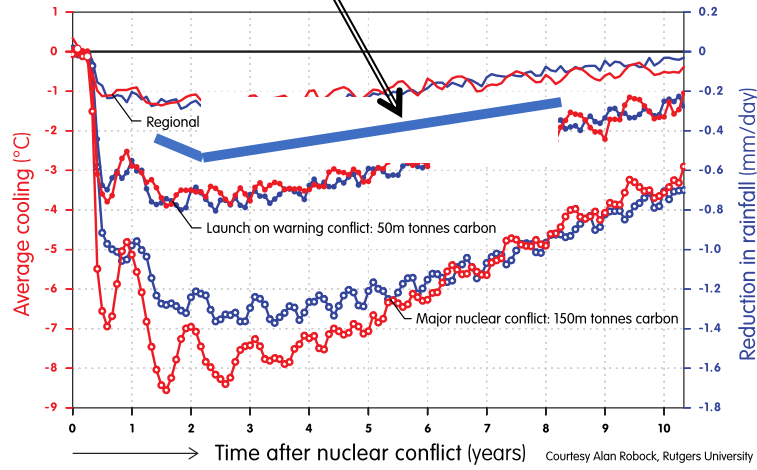


- Extreme cooling (rather than heating from carbon emissions)
- Change would be faster and larger than that due to carbon emissions
- Robust evidence for impacts – derived using modern climate models – published in academic journals

*Image credit: Alicja via Pixabay*

## Impact of Trident

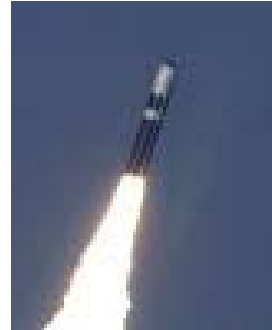
### Climatic changes caused by nuclear conflict



Courtesy Alan Robock, Rutgers University

## Impacts of UK nuclear weapons use

- ❑ One UK submarine carries at least 40 Trident II D5 100kT warheads
- ❑ at least 4m fatalities and 10m casualties across 10 or more cities.
- ❑ Only ~25 warheads would create a 1,300 km<sup>2</sup> fire zone (the 100x Hiroshima scenario) and 5m tonnes carbon
- ❑ 40 Trident w/h likely to inject 5-10m tonne carbon depending on combustible material loading and fire spread assumptions.
- ❑ Total explosive power huge - greater than 6 years of WW-II !!



Combustible loading in Russian cities ~60% of India/Pakistan

**For Discussion**



## Discussion of nuclear questions

1. Most countries do not possess nor want nuclear weapons
2. Seen as existential threat to everyone
3. Hence the UN Treaty to Prohibit Nuclear Weapons: TPNW
4. South Africa and Sweden abandoned their nuclear programmes

## Nuclear use – ‘pressing the button’ – when?

1. Fire First? As forces mass along your border?
2. Fire First? When attackers cross your border?
3. Fire First? When your forces face certain defeat?
4. Fire second? After your country has been devastated in nuclear attack?

NPT Entered into force in 1970 – original timescale of 25 years. Extended indefinitely in 1995 in exchange for the creation of a nuclear-weapon-free-zone in the Middle East

A zone which was never created. Israel continues to deny possession of nuclear weapons.

There is never a ‘right’ time to ‘press the button’...

**Immoral – target civilians; Illegal – grossly disproportionate; Genocidal – threaten humanity’s existence; Suicidal – cannot be used without damage to your own country; Not a defence; Not an “insurance” – can never claim and the damage will never be repaid...**

## Current UK military & nuclear policy

- ❑ UK military policy overspends on symbols of power – nuclear weapons and giant £6bn aircraft carriers (currently with few F-35 aircraft).
- ❑ UK/NATO favours long-range offensive military tech over less costly territorial / border defence.
- ❑ Supports US / NATO invasions : Afghanistan, Iraq, Libya, Syria.
- ❑ These invasions have made us less secure – not more.
- ❑ Symbols of power do not mean that you are safer – they inhibit intelligent thought processes via reinforcing ‘group-think’ delusions.
- ❑ The war in Ukraine is a good example of how nuclear weapons have not deterred war and how ground forces holding a border region can – or could.
- ❑ Putin says that this war is taking place under the so-called nuclear umbrella.

Eye-wateringly expensive tokensim – or totems of power / force ‘projection’