Thermal Tolerance Limits:

- **60°C:** Conservative limit for clothed individuals during short-duration exposure (ISO/TS 13571 recommendation)
- **Skin burns:** Occur at temperatures above 44°C with prolonged exposure (pain threshold ~43°C)
- **Respiratory tract damage:** Inhalation of hot gases above 60°C can cause airway burns and edema

The fractional effective dose (FED) for convective heat exposure is calculated as:

$$FED_{heat} = \sum \Delta t \ / \ t_{limit}(T)$$

where t_{limit} is the time to incapacitation at temperature T, based on empirical tolerance data.

5.2 Visibility Through Smoke

Visibility and Egress Capability:

- **5m visibility:** Minimum for unfamiliar occupants to identify exit signs and navigate corridors
- **3m visibility:** Limit for familiar occupants in known environments
- **Walking speed reduction:** Movement slows significantly below 10m visibility

Visibility is calculated from the smoke extinction coefficient:

$$S = C \ / \ K$$

S	Visibility distance (m)
K	Smoke extinction coefficient (1/m)