

FORENSIC SCIENCE  
VI SEMESTER

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### **Factors Affecting the Cooling of Body**

Various factors affect the cooling of dead body and may affect the reading and in turn the estimation of time since death may be affected. These factors are discussed as below.

1. **Atmosphere temperature** – if there is difference between the atmosphere and the body then cooling of body occurs in fashion as described above.
2. **Media of disposal** – the rate of cooling of dead body differs according to the media of disposal - whether disposed in water, air or buried in ground. Optimum cooling occurs in water media followed by disposal in air over ground and least in bodies buried in ground. Thus, the ratio of fall of body temperature in the three media i.e. water: air: grave is 4: 2: 1, popularly known as Casper's dictum.
3. **Body built** – thin built person loose heat rapidly in contrast to fatty because fat act as insulating cover and retains heat for longer duration.
4. **Age** – maximum heat loss occurs in infants and children in comparison to adults because of larger body surface area in the formers.
5. **Clothing** – clothing or protective gears like jacket, sweater etc. retains heat for longer duration so cooling of body is slower.
6. **Air movement** – environment with more air breeze movement will cause the faster cooling of body.
7. **Position and posture of body** – body with outstretched hand loses more heat because of greater surface of body is exposed.
8. **Cause of death** – if death is attributed to some infectious disease or septicemia or Bacteraemia then there may be high temperature of body at the time of death with postmortem production of heat by the action of infective organism so heat loss from the body will be slower.

## Postmortem Caloricity

Postmortem caloricity is a term applied to a condition of a dead body where there is rise of body temperature observed in contrast to fall of body temperature. This phenomenon is observed for the first two hours or so in bodies after death. The rise in body temperature can be credited to following conditions.

- Postmortem glycogenolysis – this is compulsory phenomenon observed nearly in all bodies and starts soon after death. In an average adult person, postmortem glycogenolysis produces up to 140 calories that has capacity to increase the body temperature at an instant time by 3.6°F or 2°C.

Thus, considering the inner core body temperature, when the body is yet to loose heat there may be virtual rise of temperature of body.

- Cause of death – death caused by infective conditions or septicemia or Bacteraemia increases the body temperature by postmortem action of these organisms whereas in case of sunstroke or Pontine hemorrhages, there is loss of heat regulatory center.

In case of strychnine or tetanus poisoning, the rise in body temperature is due to increase in muscular activity that causes to raise the body temperature. Table 7.8 displays the condition and mechanism of postmortem caloricity.

<b>Table 7.8: Condition and mechanism of postmortem caloricity</b>	
<b><i>Cause of death</i></b>	<b><i>Mechanism</i></b>
Septicemia	Increased production of heat
Infectious disease	Increased production of heat
Sunstroke	Heat regulation center disturbed
Pontine hemorrhage	Heat regulation center disturbed
Tetanus	Heat production due to muscular activity
Strychnine	Heat production due to muscular activity

## **Medicolegal Importance**

1. It is sign of death.
2. Time since death can be estimated.
3. Early cooling of body delays the process of rigor mortis and thus retards decomposition