

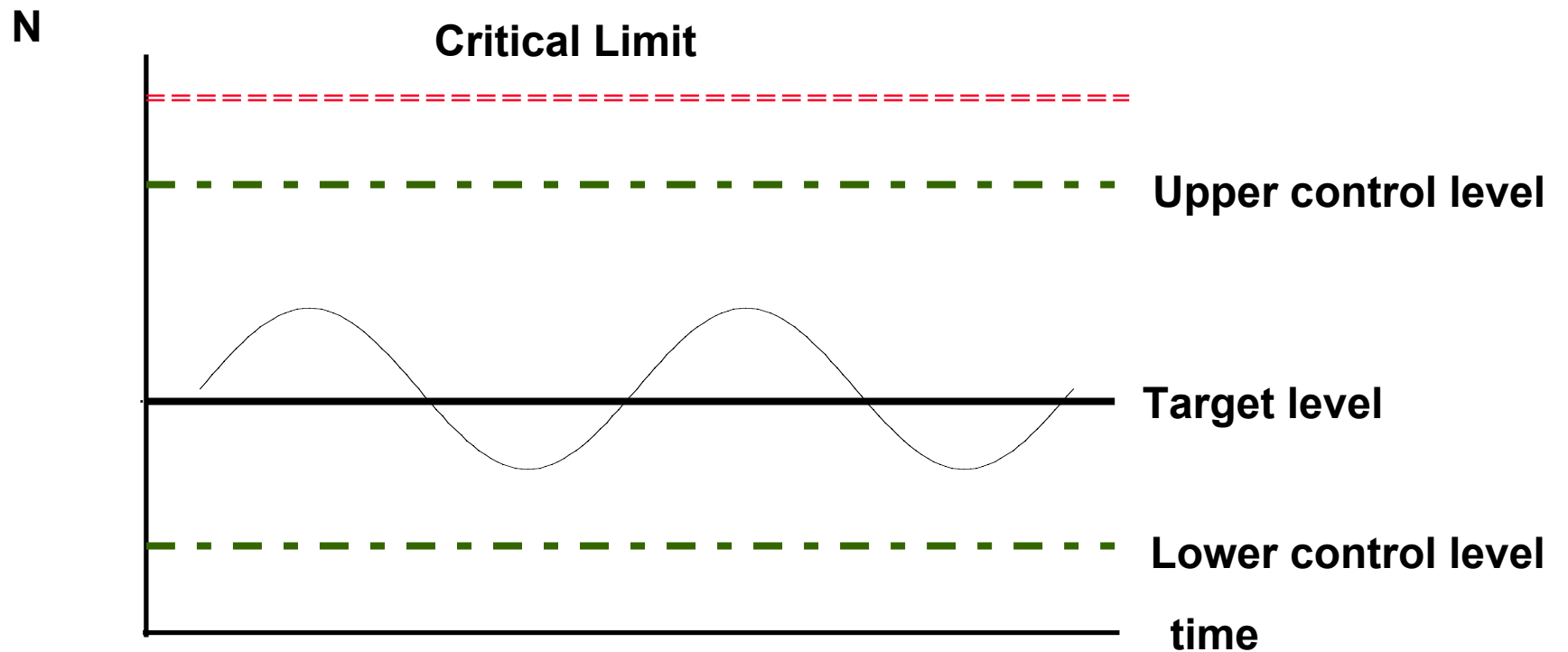
Module 03 - lecture 04

Monitoring

Monitor

The act of conducting a planned sequence of observations or measurements of control parameters to assess whether a CCP is under control

Continuous monitoring



Critical limit

**A criterion which separates
acceptability
from
unacceptability**

Critical limits

Critical limits can be

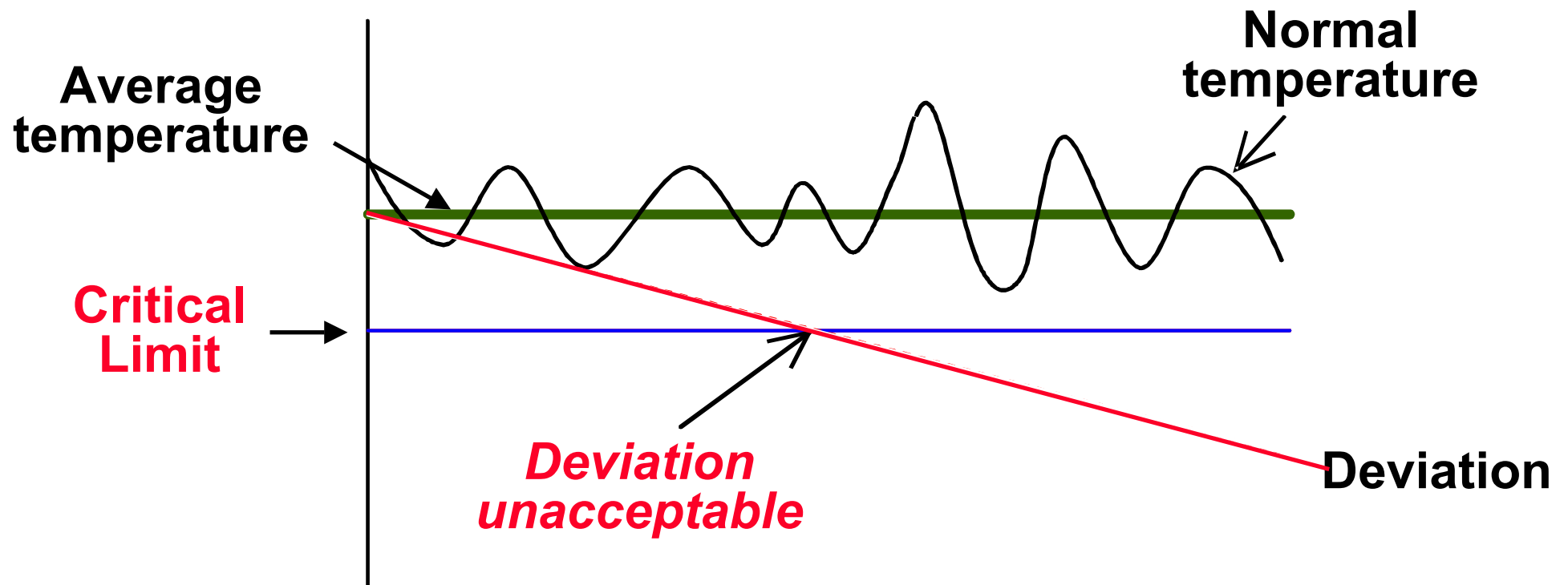
- ◆ values of pH, a_w , temperature, time
- ◆ absorbed radiation dose
- ◆ levels of disinfectant or antimicrobial agents
- ◆ level of overpressure
- ◆ level of cleanliness
- ◆ limits of residues
- ◆ limits of contaminants
- ◆ limits in microbiological criteria

Questions for each CCP and hazard (1)

*When is deviation from normality
unacceptable?*

(i.e. establishment of Critical Limits)

Determination of Critical Limits



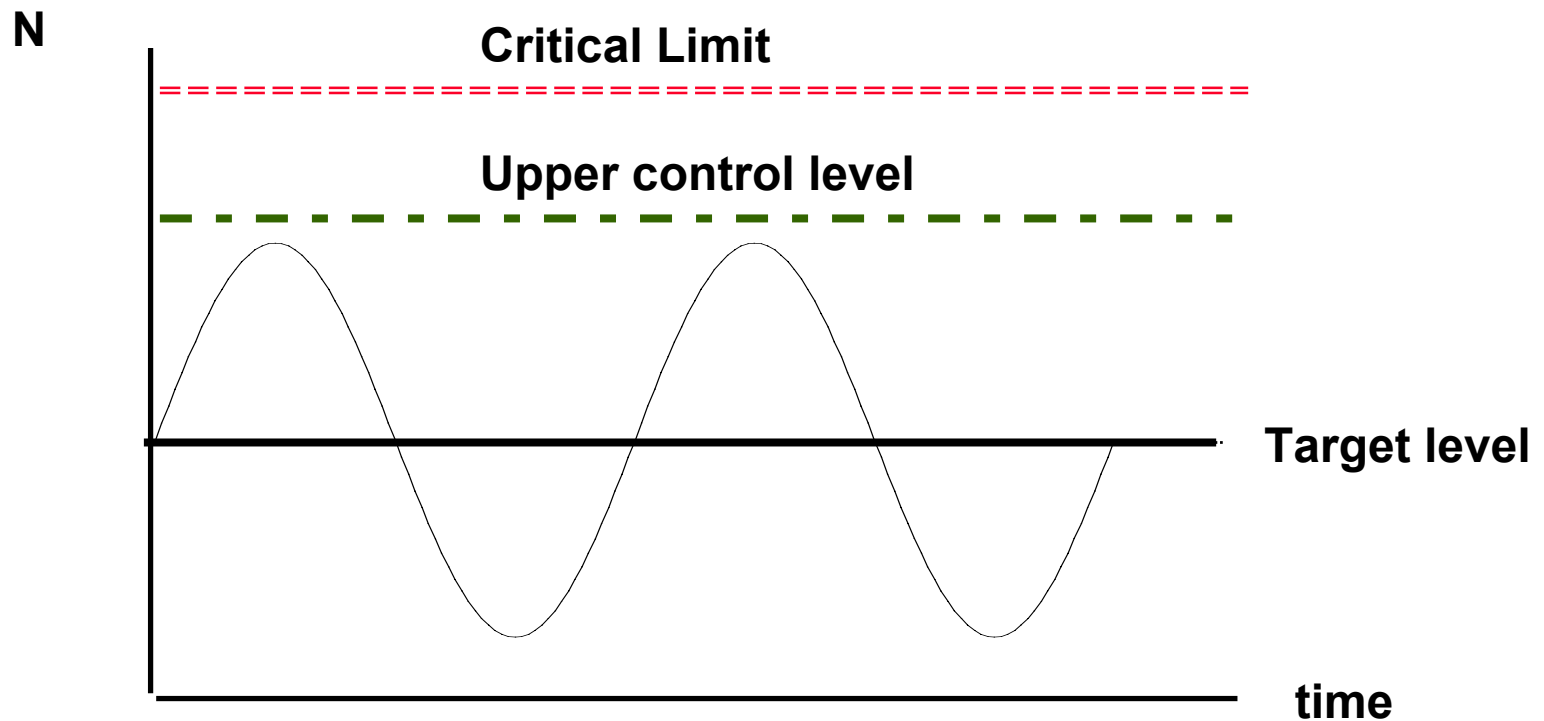
Corrective actions

**Actions to be taken when
the results of monitoring at the CCP
indicate a loss of control**

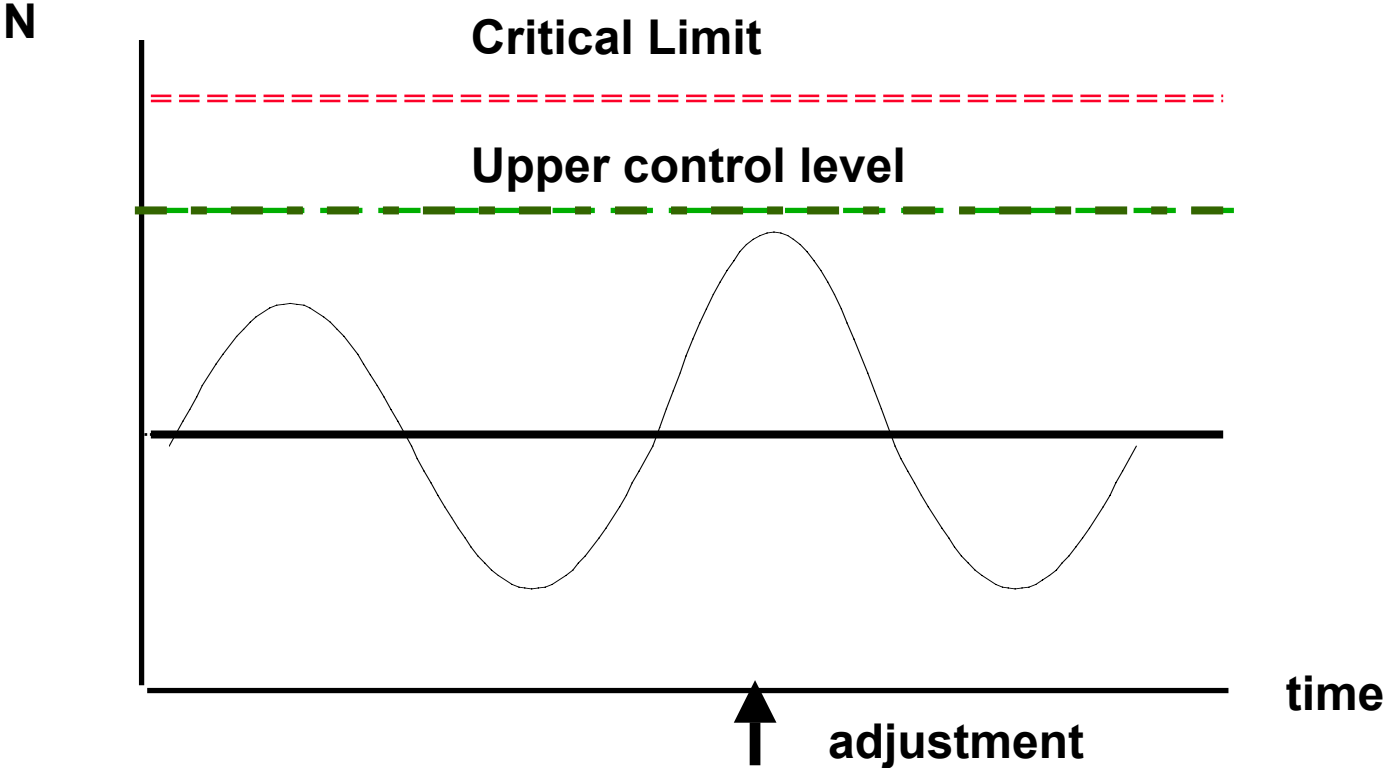
Deviation

**Failure to meet a
critical limit**

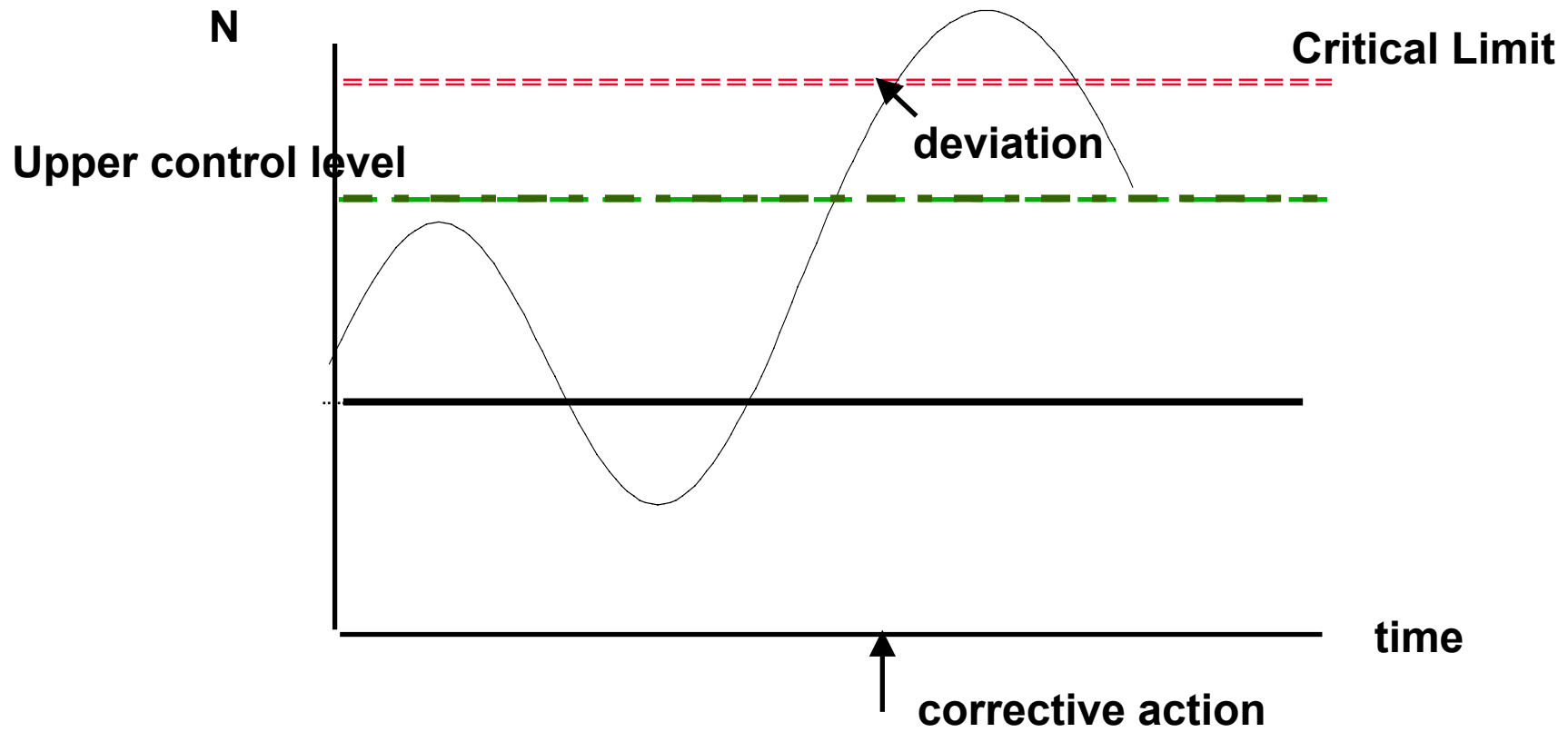
Process “in control” (1)



Process "in control" (2)



“Loss of control”



Questions for each CCP and hazard (2)

How can this be identified?

How frequently should it be checked?

How should results be recorded?

(i.e. establishment of monitoring procedures)

Monitoring methods or equipment

- **Observation**
- **Time recorder, stopwatch**
- **Temperature recorder, thermometer**
- **Flow meter, pressure gauge**
- **pH meter, a_w meter**
- **Rapid microbiology tests**

Questions for each CCP and hazard (3)

*What is the appropriate reaction
to deviations?*

(i.e. description of corrective actions)

Corrective actions

- **should readjust deviations before the situation is out of control**
- **should prevent hazardous products reaching the consumer**
- **should prevent recurrence of the event**

Key messages

- **Monitoring should ensure that the "process" at a CCP is kept under control**
- **Procedures should give early warnings which enable adjustments to be made before the "process" is out of control**
- **When Critical Limits have been surpassed, corrective actions should ensure that the defective product does not reach the consumer**