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Beverages & Foods

Heat Treatment Workshop  
Department of Grain Science and Industry  
Kansas State University

Heat Treatment Definitions and  
Terminology



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**Rational for Knowing Terms and  
Definitions**

- **An effort to standardize the way practitioners communicate with each other regarding heat treatments.**
- **Avoiding misnomers.**
- **Learning to work the science while keeping it credible**



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# Heat Treatment Definitions and Terminology

1. **\_\_\_\_\_** refers to the hotness or coldness of an area or object as it exists, or rests within its environment.
2. **\_\_\_\_\_** is usually a vertical updraft of air that can occur in large or tall buildings.
3. **\_\_\_\_\_** is the flow of heat through a substance, or when two objects come in physical contact.



## Heat Treatment Definitions and Terminology

4. When the effect of shrinking or drawing together occurs due to a reduction in physical temperatures , this is called \_\_\_\_\_.
5. \_\_\_\_\_ is when the flow of heat by means of a fluid medium or gas, normally water or air, is discharged into an area and heats that area.
6. \_\_\_\_\_ is the general term used to describe the fact that a specific area within a room being heated is not reaching prescribed temperature.



## Heat Treatment Definitions and Terminology

7. \_\_\_\_\_ is what we say when we mean a unit of measurement that describes temperature differentials.
8. \_\_\_\_\_ describes the physical act of increasing in size, quantity or scope due to increased temperatures.
9. \_\_\_\_\_ refers to equipment, electronics, paints, sealants, lighting or other surfaces and objects that can accept temperature changes without adverse affects.



## Heat Treatment Definitions and Terminology

10. \_\_\_\_\_ is the comprehensive list of items that need removing, special care, or tasks and activities needing to be followed-up on that are essential to the success of a heat treatment.
11. \_\_\_\_\_ is the statement or equation of fact and systematic logic that directs all activities of a prescribed heat treatment in a food plant.
12. Factors of a general heat treatment formula are:  
Time + Temperature + \_\_\_\_\_ + \_\_\_\_\_ = HTF



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## Heat Treatment Definitions and Terminology

13. \_\_\_\_\_ are critical elements to the success of any heat treatment.
14. \_\_\_\_\_ is the condition that occurs when heated air is allowed to become undisturbed resulting in horizontal layering in various strata.



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**Heat Treatment: Who is really running the show?**

**(A list of the contributors and activities that together make a heat treatment successful.)**





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## **Heat Treatment: Who is really running the show?**

- 1. Typical Scenario for Planned/Unplanned exercises**
  - Scheduled from previous year**
  - Starting to see evidence or activity**
  - Breaking/separating systems**
  - Keep dialog open, timely and accurate**



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## **Heat Treatment: Who is really running the show?**

### **2. Meeting with Plant Manager and Plant Leaders**

- **What it is....and the extent of the issue**
- **State your “Plan A” and have a “Plan B”**
- **Meet with planners to divert, hold any movement of product, pkg, or ingredients**
- **Take notes and document the meeting**
- **Timing**



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# Heat Treatment: Who is Really Running the Show?

## 3. Meeting With Maintenance

- Explain the nature and purpose of the heat treatment
- Develop and refine checklist
- Make walk- through of facility
- Identify problem doors and windows
- Note any area or equipment where special precautions need to be taken



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## **Heat Treatment: Who is really running the Show?**

### **4. Maintenance Meeting (cont.)**

- **Security service for on-site coverage**
- **Establish correct HT Formula**
- **Obtain commitment for maintenance/cleaning issues**
- **Clearly define times for HT initiation, Temp recording, shutting off and airing out.**
- **Line item list of all materials**



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## **Heat Treatment: Who is Really Running the Show?**

### **5. Updating Emergency Contact Lists**

- **Plant employees**
- **Fire Department**
- **Engineering/Maintenance Contractors**



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## **Heat Treatment: Who is Really Running the Show?**

### **6. Documenting Results**

- **Temperature recording devices**
- **Infrared sensors**
- **Computerized programs**
- **Test Cages**
- **Assess each area that received heat treatment**
- **Communicating results**