

Module 1: Hygiene

Contents:

Basics of hygiene in general and hygiene specific to laundries and textile services in order to ensure a correct implementation of EN 14065 (RABC-System) with regard to hygiene.

Hygiene

Hygiene - General

Hygieia: greek goddess of health

Definition:

Set of procedures and behaviours which aim to prevent diseases and preserve health.



***Hygiene means prophylaxis,
not therapy!***

Hygiene

Basic hygiene-related terminology

- **Infection:** settlement and reproduction of pathogenic micro-organisms
- **Pathology:** ability of micro-organisms to bring on diseases
- **Formation of** ability of micro-organisms to build toxins (endotoxins, exotoxins)
- **Latent infection:** viruses living in the body without causing illness (origin!)
- **Virulence:** invasion of micro-organisms and the capability of building toxins
- **Incubation time:** time between the penetration of viruses and the first symptoms of illness

Hygiene

Why do I need Hygiene?

- Because laws, regulations, consumer protection, product liability and product-safety require hygiene.
- Because customer require it for quality assurance purposes (e.g. HACCP principles or the International Food Standard).
- Because consumers expect hygiene and wants to buy hygienically clean products.
- Because „hygienic ignorance“ leads to sanitary- and social problems.

Hygiene

Chain of Infection

Origin of infection



- human
- animal

way of transmission



- aerogen (air)
- alimentary (groceries)
- contact
- transmissive (insects)

sensitive individual

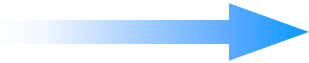


- infection
- endogen (by itself)
 - exogen (of external origin)

Hygiene

What does Hygiene mean?

protection against:

- illness
- dirt
- losses
- negative effects on products
 - claims
 - annoyance
- proceed as planned!!! 

Hygiene

Example for a general hygiene concept

<u>what</u>	<u>when</u>	<u>how</u>	<u>what with</u>	<u>what from</u>	<u>who</u>
work-surface	after work	spray, disperse with a clean cloth every day, do not dry	product XY	e.g. spray bottle	employees

Hygiene

Individual Hygiene

Jewellery

- should be reduced to the minimum, because it leads to an increased risk of infection and injury and supports the the formation of niches where germs can accumulate



Germ on : bracelet

rings

Hygiene

Personnel Hygiene

Humans are the most critical factor!

- Forehead, scalp: 10^6 germs per cm^2
- Saliva, nose-secretion: 10^5 to 10^6 germs per cm^2
- Sneezing: 10^5 germs, speed of 100 m/s
- Fingertip: 20 – 100 germs per cm^2
- **Hand: 10^3 to 10^4 germs per cm^2**

Hygiene

The largest amount of germs is transmitted by hands



Bio-burden of the surface of a handprint

Hand washing and **hand disinfection** are therefore the most important personal hygienic procedure!!!

Hygiene

Hygienic hand disinfection





when?

- Before starting work and before resuming work
- Before and after a break (e.g. lunch break)
- After visiting the washrooms
- After wiping the nose
- Following personal needs

(- large wounds on hands should be bandaged waterproof)

Hygiene

Hygiene plan

<u>what?</u>	<u>what with?</u>	<u>how?</u>
<p>Pre-cleaning of visible, rough, incrustated soiling</p> 	<p>Soap/Washing-lotion Use a brush or similar accessories</p>	<p>Scrape hands respectively brush until the visible rough,incrustated soiling has been removed</p>
<p>Washing hands</p> 	<p>Washing lotion</p>	<p>Wash carefully with soap from the dispenser, wash accurately under running water! and dry with a clean towel</p>
<p>Disinfecting hands</p> 	<p>Hand-disinfectant</p>	<p>Rub 3ml of concentrate into e dry hands for min. 30 sec.!!!</p>
<p>Possibly handcare</p> 	<p>Creme</p>	<p>Cream hands several times during the day with grooming substances</p>

Hygiene

Protective clothing in hygiene-sensitive areas

- **Besides hands protective clothing is a main vehicle of germs transmission**
 - Dirty side of the laundry:
 - E.g. in hospitals: following care of patients the protective gowns can be massively contaminated with germs
 - E.g. at the butchers: while working with meat the overalls can quickly be contaminated with salmonellae or prions
 - Clean side of the laundry:
 - After a few hours of wearing especially the sleeves and the abdominal-area in particular are massively contaminated
- >>>>> Make sure workwear is change on a regular basis to prevent cross contamination and infections in laundries**

Hygiene

Dirty operational areas

Dirty operational areas are:

- Transport-vehicles
 - Income of goods
- Storage of pre-products
 - Waste disposal
- Storage of cleaning-agents and disinfectants
 - Common rooms and changing rooms
 - Sanitary facilities and washrooms

Hygiene

Cleaning , Disinfection , Sterilisation

	Cleaning	Disinfection	Sterilisation
Definition	Disposal of dirt	To place dead or live material in a condition where no more risk of infection is possible	Causing sterility
Indication	In case of dirt and residuals, if possible germs are apathogenic respectively physiological or if transmittance is irrelevant or unlikely	In case of insufficient cleaning is not sufficient because patho-genious germs are existing and a transmittance is probable	If very small amounts of germs or exceedingly resistant pathogenic germs can lead to an infection
Examples	Floors, sanitary facilities, body	Grooming aids, textiles, surfaces near to textiles, contaminated areas of bodies	Medical instruments

Hygiene

Cleaning of dirty operational areas

Wet-cleaning is required!

- Either drinking water only or drinking water with washing active substances, which are able to remove the soiling from surfaces

Hygiene

Disinfection of surfaces

= Elimination of pathogens

= Prevention of spreading

- Specific information on cleaning and disinfecting has to be provided for each type of operational area.
- Cleaning and disinfecting services are often subcontracted to external companies which have the necessary know-how
- Important: observance of detection time, dosage, temperature, must be adapted to the specific needs of each area.

Hygiene

Important when disinfecting surfaces

- **Read risk related information**
- **Use gloves**
- **Remove rough dirt**
- **Respect dosage**
- **Observe detection time **and, if recommended****
- **Rinse with water (drinking water-quality)**

Hygiene

Pestcontrol

Pestcontrol is relevant because vermin:

- **Eats nearly everything**
 - **Litters products**
 - **Causes diseases**
 - **Breeds very fast**
 - **Is difficult so see**
- **Has to be fought against after introducing the RABC-System**

Hygiene

Teamwork I

Hygiene in a team only works, when everyone acts in the same way!!!

- Validity for everyone!
 - Regular reminder!
- Integrative information!
 - Reliable control!
- Mutual confidence!

Hygiene

Teamwork II

Four eyes see more than two!

- Identifying hazards ensures safety :
 - **biologically** (micro-organisms, vermin)
 - **chemically** (residuals of chemicals)
 - **physically** (foreign bodies e.g. glass etc.)

Hygiene

External controls

The implemented RABC-System is controlled by external experts on a yearly basis

- Examination of personnel's inner hand surfaces via contact-slides, as well as examination of surfaces around textiles, damp and dry laundry
- Control of disinfecting washing procedures by bio-indicator
- Examination of public-, fountain- and/or reprocessed water

Hygiene

Hygiene Examination

- **Water examination (process water, last rinsing procedure):**
 - Total number of *E. coli* germs and **coliforme** germs
- **Bioindicators (washing procedures):**
 - Testing germs: *Staphylococcus aureus* and *Enterococcus faecium* (according to RKI)
- **Examinations via contact slides (textiles, surfaces, personnel):**
 - Definition of total number of germs, additionally free of human pathogens (e.g. *Salmonella spp.*, *Staphylococcus aureus* and *Listeria monocytogenes*)

Hygiene

Regulations I

- **Regulations in the field of hospital hygiene:**
 - Medical products EN ISO 14971
 - **Infektionsschutzgesetz (IfSG- ehemals BSeuchG Bundesseuchengesetz)**
 - **Medizinproduktegesetz** (MPG vom 02.08.1994)
 - Guidelines for processing hospital laundry (Ausgabe 1974)
 - **Richtlinie Krankenhaushygiene und Infektionsprävention (RKI Richtlinie) Anlage (Juli 1995, Nr. 7)**
 - **DGHM (Deutsche Gesellschaft für Hygiene und Mikrobiologie)**

Hygiene

Regulations II

- **Regulations for the food area:**

- Lebensmittelhygieneverordnung (LMHV)
- Lebensmittel- und Bedarfsgegenstandegesetz (LMBG)
- diverse regulations (milk-regulation, meat-regulation etc.)

- **Guidelines and Standards**

- **Hygiene training** / DIN 10514
- EWG/93/43 Guidelines of the advisory board of food-hygiene
- DIN 10503 Food-hygiene
- DIN 10524 Food-hygiene – workwear in the food industry

Hygiene

Regulations III

- **Regulations in the field of pharmaceuticals**
 - regulation on drugs and medicines
 - pharmacy regulation
 - medical-microbiological laboratories/
classification
 - selection of places of employment, premises/
product safety requirements and examination
(DIN 58 956)
 - summary of bio-burden on surfaces of pharmaceutical
industry

Hygiene

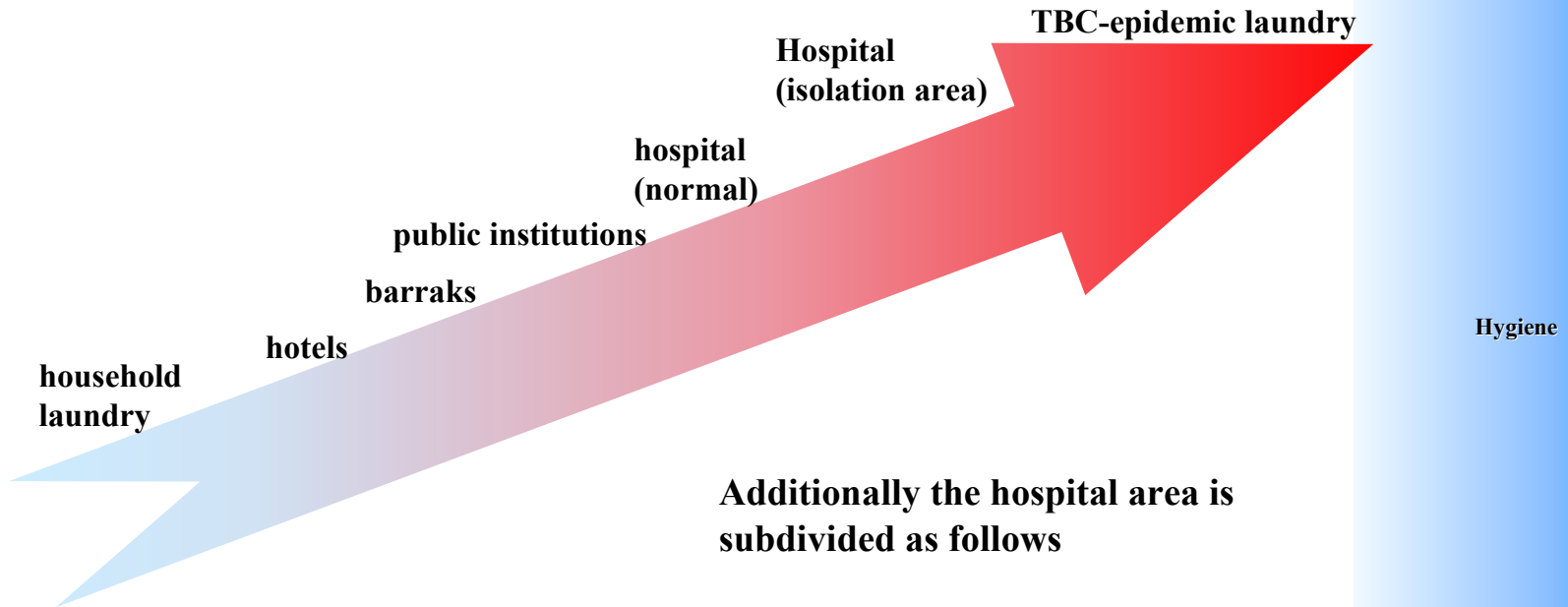
Effect of legislation

- **Experience has shown that it is the customer who has the right to demand the implementation of regulations according to hygiene standards and guidelines !**

Hygiene

What is hospital laundry?

risk of infection increases as follows:



Additionally the hospital area is subdivided as follows

What is hospital laundry?

Hospital

Highly infectious laundry
(epidemic station)



Infectious laundry
(Microbiology/Pathology)



Infect suspicious laundry
(any other hospital
laundry, asylum laundry)



Laundry

Must not be accepted or
reprocessed by textile-
service companies

Disinfection + Washing

(Disinfection has to be finished before
draining off the water of the first cycle)

Disinfecting washing
procedure

Hygiene

Hazard is determined by the type of micro-organisms!₂₉

What is hospital laundry?

Definition of „Laundry in the healthcare sector“ according to RKI-Guideline:

...„this applies in particular to hospitals, geriatric care and rehabilitation facilities with clinical character and facilities for day-case surgery....“

(See 4.4.3 and 6.4 of the guidelines „Hospital-Hygiene and Infection Prevention“)

Hygiene

GUV-V 7y (VBG 7y)

Hospital laundry according to GUV-V 7y

- § 20. Hospital laundry for the purposes of this accident prevention regulation is laundry that comes up while examining, medicating, nursing and taking care of
- sick persons in hospitals
as well as
 - in nursing-stations and wards of asylums

Hospital laundry also includes soiled textile coming from medical laboratories and department of pathology as well as infectious laundry coming from different areas

Other areas:

- infectious keeping of laboratory animals,
- Laboratories that carry out experiments with new combined nucleic acids

Hygiene

Testgerms

- According to RKI both *Enterococcus faecium* and *Staphylococcus aureus* as test germs on germ carriers with germs in blood for testing disinfecting washing-procedures must be destroyed :
- In order to ensure that viruses (Hepatitis-, AIDS and SARS) are also destroyed, a disinfecting method of sphere A and B has to be used.

Hygiene

Validation of disinfecting washing procedures

Germ carriers coming from the hospital area (according to RKI-Guidelines) have as well established in other areas and are also used for the validation of disinfecting washing procedures for example in the food sector.

Hygiene

End of module 1 (Hygiene)

„It's not enough to know, one also has to make use of it ;

It's not enough to want, one must also do it"

J. W. v. Goethe (1748 – 1832)

Hygiene