

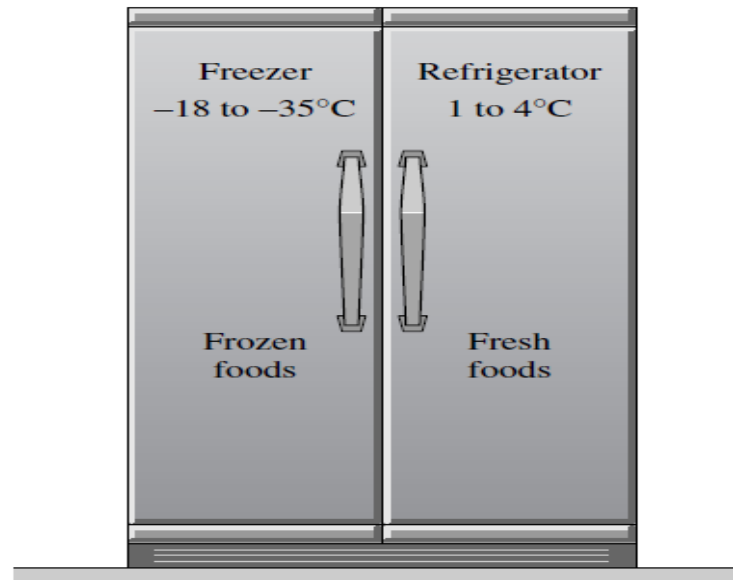
Effective methods to implement food safety in refrigeration



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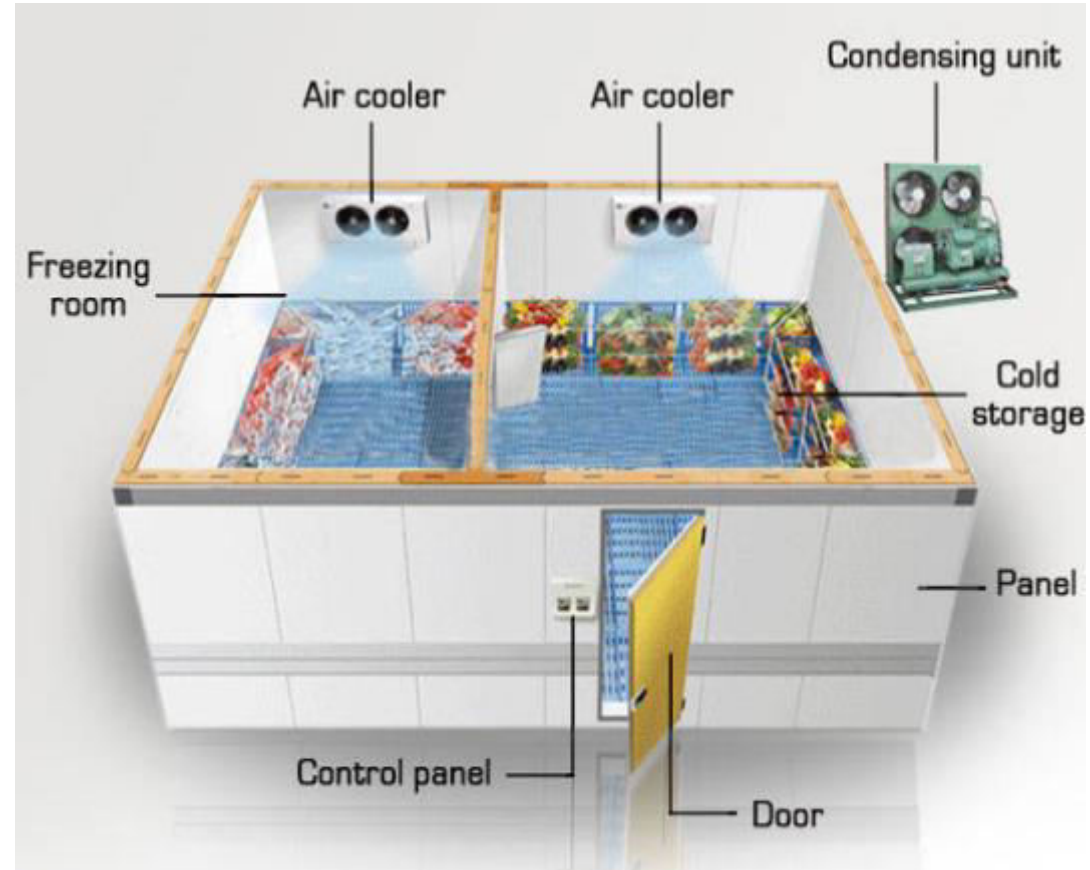
Temperature

The main application to prevent microorganisms' growth in food products. The storage life of fresh perishable foods such as meats, fish, fruits, and vegetables can be extended by several days by cooling, and by several weeks or months by freezing.



Design

- Location
- Control Panel
- Quality of Fans
- Wall, Floor and ceiling
- Shelves
- Air circulation
- Raw food storage
- Final products



Design

► Location

The cold storage room should, as far as possible, be located on the cold side of the building.



Design

➤ Doors



➤ Wall



▶ Electric Forklift

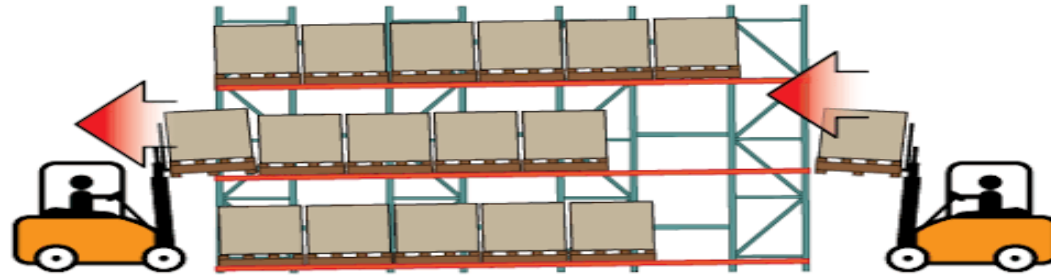


▶ shelves



Inside Refrigerator

- ▶ FIFO System



- ▶ Avoid Overstock



Inside Refrigerator

- ▶ Avoid storage under fans



Inside Refrigerator

- ▶ Mix Raw food with final products (Ready to eat) food can cause cross - contamination.



Inside Refrigerator

- ▶ Storing food products in the floor or near to the door

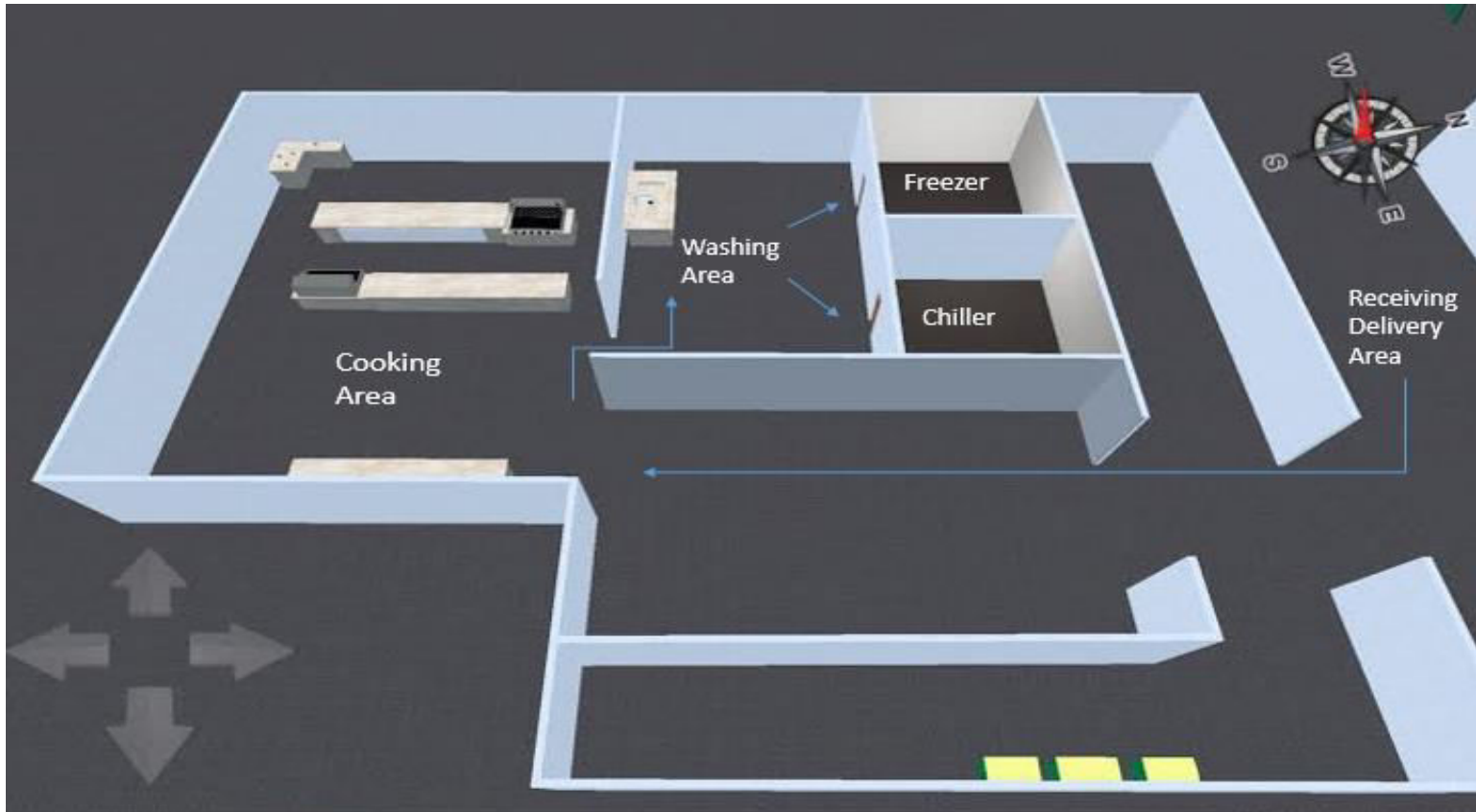


Using door alarm



Delivery

▶ Case Study 1



Delivery

► Results

Type of products	Trolley number	Time to transfer products (minutes)		
		Stage 1	Stage 2	Stage 3
Frozen products	1	6	11	3
	2	5	15	8
	3	5	23	2
	4	3	22	7
	5	2	28	11
Chilled products	6	1	11	15
	7	1	26	16

Case Study 2

Supermarket chickens: rates of contamination

Retailer	% samples with Campylobacter	% samples with high-level Campylobacter
Asda	78%	28%
Co-op	73%	19%
M&S	67%	22%
Morrison's	69%	21%
Sainsbury's	69%	14%
Tesco	64%	11%
Waitrose	69%	16%
Others	76%	25%

Source:
FSA

References

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Thank you



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