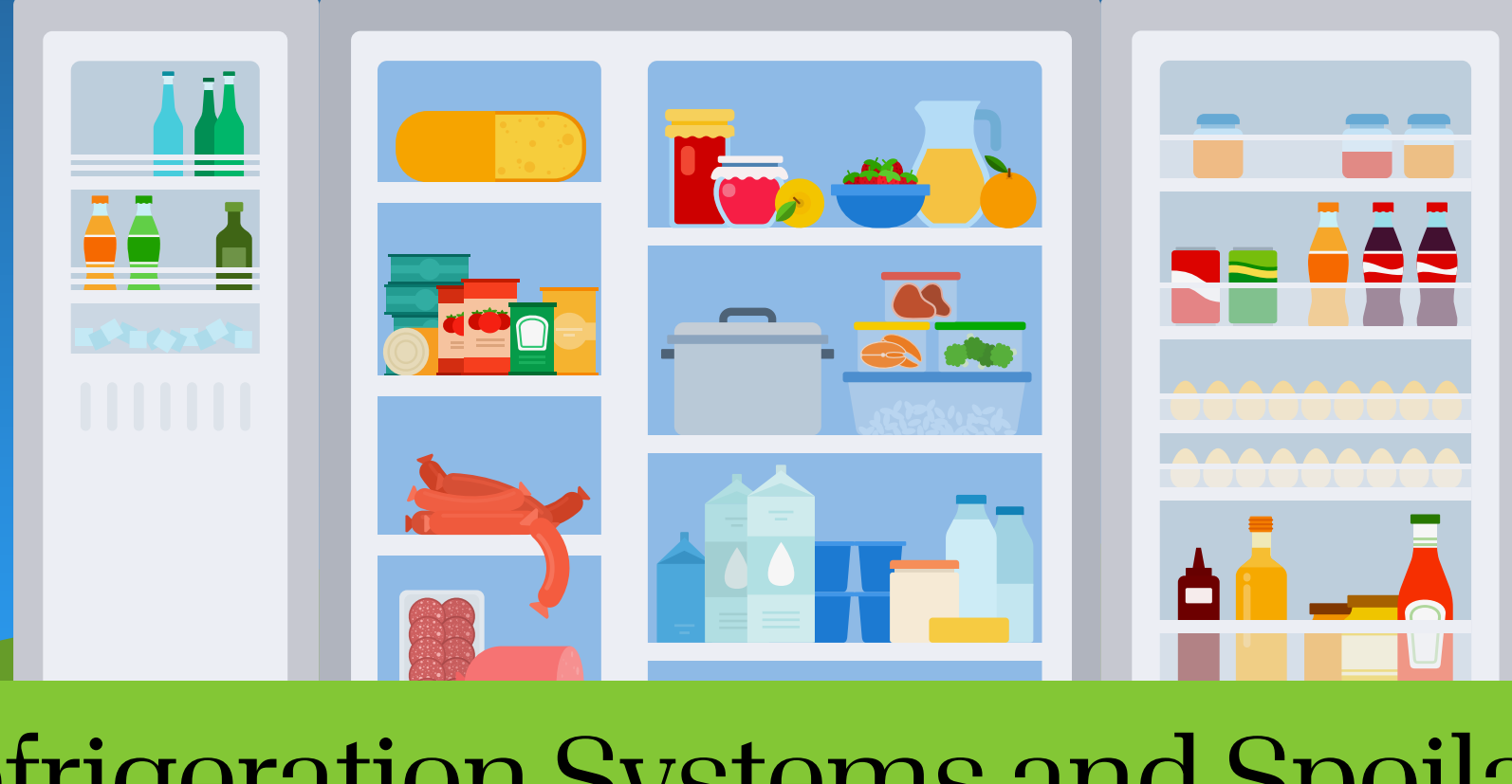


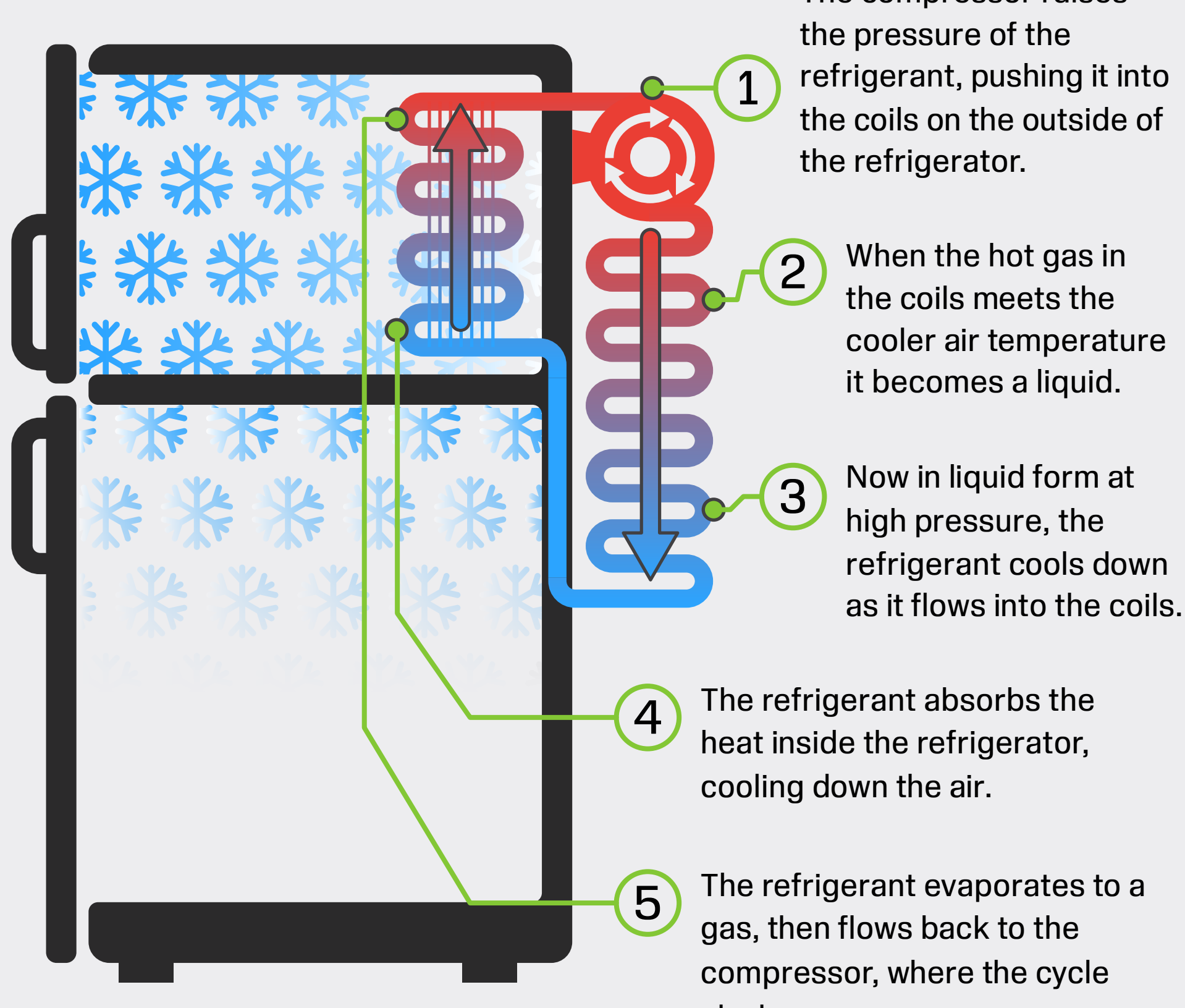
# Risky Business

## What You Need To Know About...



## Refrigeration Systems and Spoilage

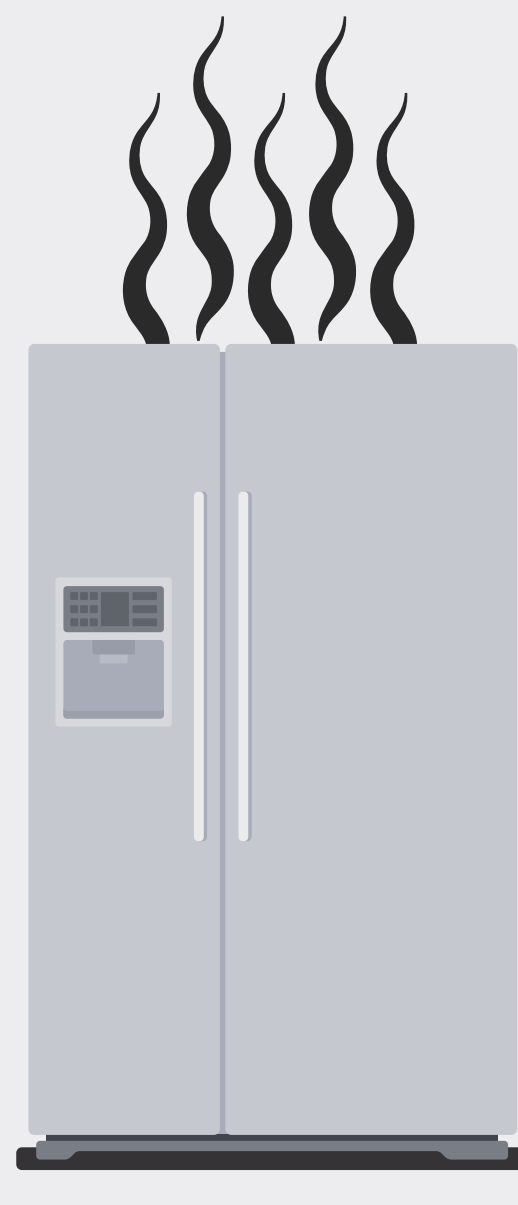
### How They Work



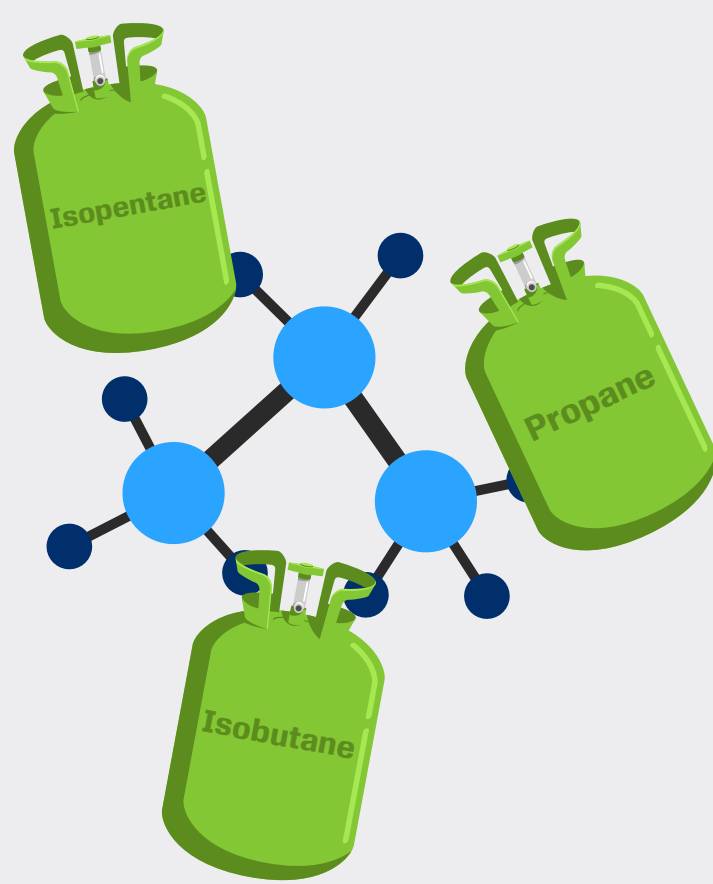
## Why They Break Down:

Loss of refrigeration can result in physical damage, spoilage and business interruption.

- Over-frequent on/off cycling:** This shortens the life of the insulation surrounding the motor windings, causing motors to burn out prematurely.
- Voltage fluctuation:** Any sudden change in voltage will cause motor strain and increase the risk of breakdown.
- Systems sitting idle:** Most failures occur when equipment is started after sitting idle, or when it cycles on and off frequently.
- Inadequate maintenance:** 35% of equipment breakdowns can be attributed to human error.



## Emerging Trends:



Due to environmental protocols, existing refrigerant gases are being replaced with natural gases, such as propane, isobutane and isopentane. Compared to traditional halogenated refrigerants, such as R-22, natural refrigerants help protect the ozone layer. However, in many cases, these natural gases are flammable.

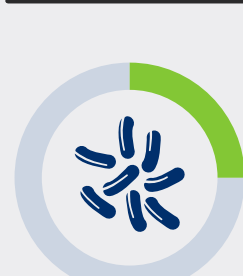
## Preventive Maintenance:

### Suggestions for refrigeration loss prevention:

- Visually inspect refrigeration units for signs of corrosion, unusual vibrations and oil stains. Check that the drain pan is clear of debris.
- Check for decay in the insulation on suction lines between the condensing unit and the evaporator coil. This can cause condensation and water damage.
- Ensure that refrigeration units are covered by a service contract that includes emergency response.
- Clean evaporator and condensing coils every 30 days.
- Clean fan blades to reduce drag.

## Spoilage Facts:

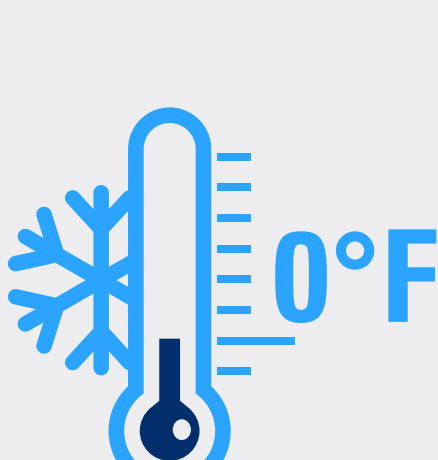
Various factors cause food spoilage, making items unsuitable for consumption. Light, oxygen, heat, humidity, temperature and bacteria can all affect both safety and quality of perishable foods.



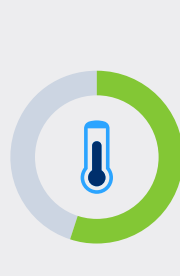
25% of all foods produced globally are lost due to microbial spoilage.<sup>1</sup>



Refrigeration slows bacterial growth. A refrigerator set at 40°F or below will protect most foods.<sup>2</sup>



Freezing at 0°F keeps food safe from spoilage.<sup>3</sup>



About 30% of global food produced is lost between on-farm food production and storage at a retail facility, largely as a result of poor cold chain management.<sup>4</sup>



Electronic and digital technology make it possible to monitor walk-in freezers and other refrigerators 24/7 so a restaurant or grocery store can receive instant alerts for temperature changes outside of normal ranges.<sup>5</sup>

#### References

- <https://www.alliedacademies.org/articles/mechanism-of-microbiological-spoilage-of-foods-and-food-safety-21683.html>
- <https://ask.usda.gov/s/article/Why-is-a-refrigerator-important-for-keeping-food-safe>
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