

# **IARW – WFLO REFRIGERATION AND ENERGY COMMITTEE**

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**IAR Presentation – Bruce Badger**





# This is a business decision

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- ❑ Dollars are dollars
- ❑ Choosing the “best” refrigeration system
- ❑ “There is no free lunch.”



# So where are we now?

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- ❑ Synthetic refrigerants
- ❑ Energy efficiency
- ❑ Global warming
- ❑ Regulation



# Ammonia Systems – Europe/US

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- Europe
- US





# Refrigeration Systems - IIAR Worldwide perspective

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- Ammonia
- China
- Limitations



# Ammonia Refrigeration Systems - IIAR Worldwide perspective

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- Regulations
- Fatality rates
- Lightning



# The myth about refrigerants.

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- Refrigerants are high pressure gases



# Ammonia as Replacement option

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- R-22
- Cascade systems
- Commercial versus Industrial



# What are we doing to help?

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- ❑ Safety Days
- ❑ Publications
- ❑ Codes / Standards
- ❑ Government
- ❑ Training
- ❑ Alliances



# What are we recommending?

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Direct ammonia

Ammonia / CO<sub>2</sub> Cascade

Ammonia / glycol



# What are we recommending?

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Less refrigerant

Less regulation

Less energy

Low cost

Easier to operate

Easier to Maintain



# Why are we recommending?

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Fewer leaks

Zero Global Warming

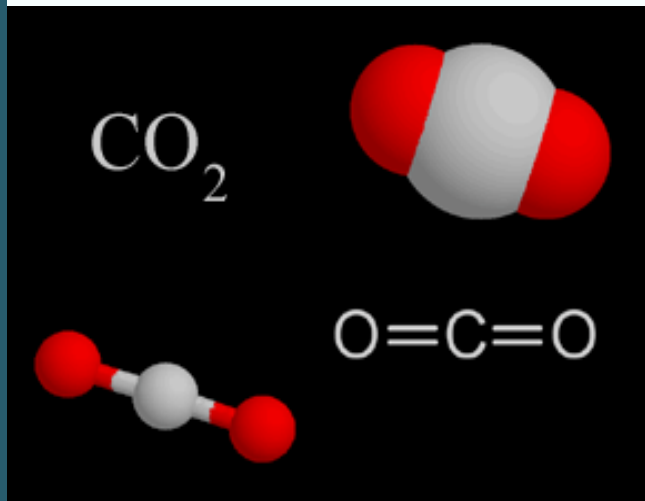
Zero Ozone Depletion

Energy Efficient

Low cost



# Ammonia





# Ammonia and CO<sub>2</sub>

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## The Future Proof Refrigerants