

# **AWO – RCP Recertification Training**

## **CREW ENDURANCE MANAGEMENT SYSTEM (CEMS)**

*Jo Ann Salyers  
Salyers Solutions, LLC  
March 10, 2009*

# DISCUSSIONS

- **CEMS**
  - **The Auditor's Role**
  - **CEMS as it relates to the RCP Audit Management, Coastal & Inland Assessment Checklist**

# The Auditor's Role

Audit – Documented means to verify by exam & objective evidence.

- Evidence that CEMS is actively used.
- Verify the adequacy.
- Verify implementation.

# RCP Audit Management Assessment Checklist

- Is the company familiar with the USCG-AWO Safety partnership, CEMS?

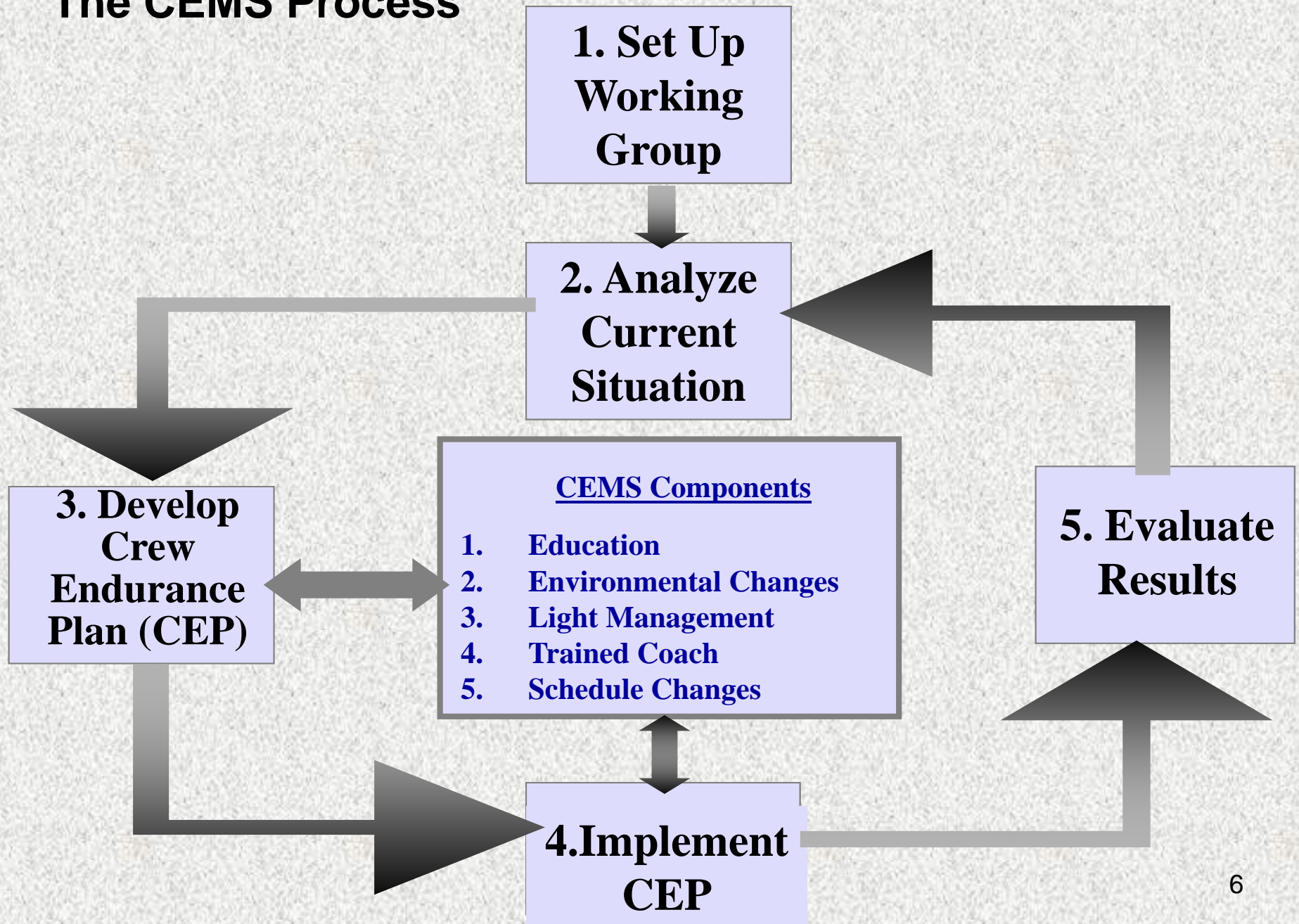
# Crew Endurance

- The ***ability to maintain performance within safety limits*** while enduring job-related physical, psychological, and environmental challenges.

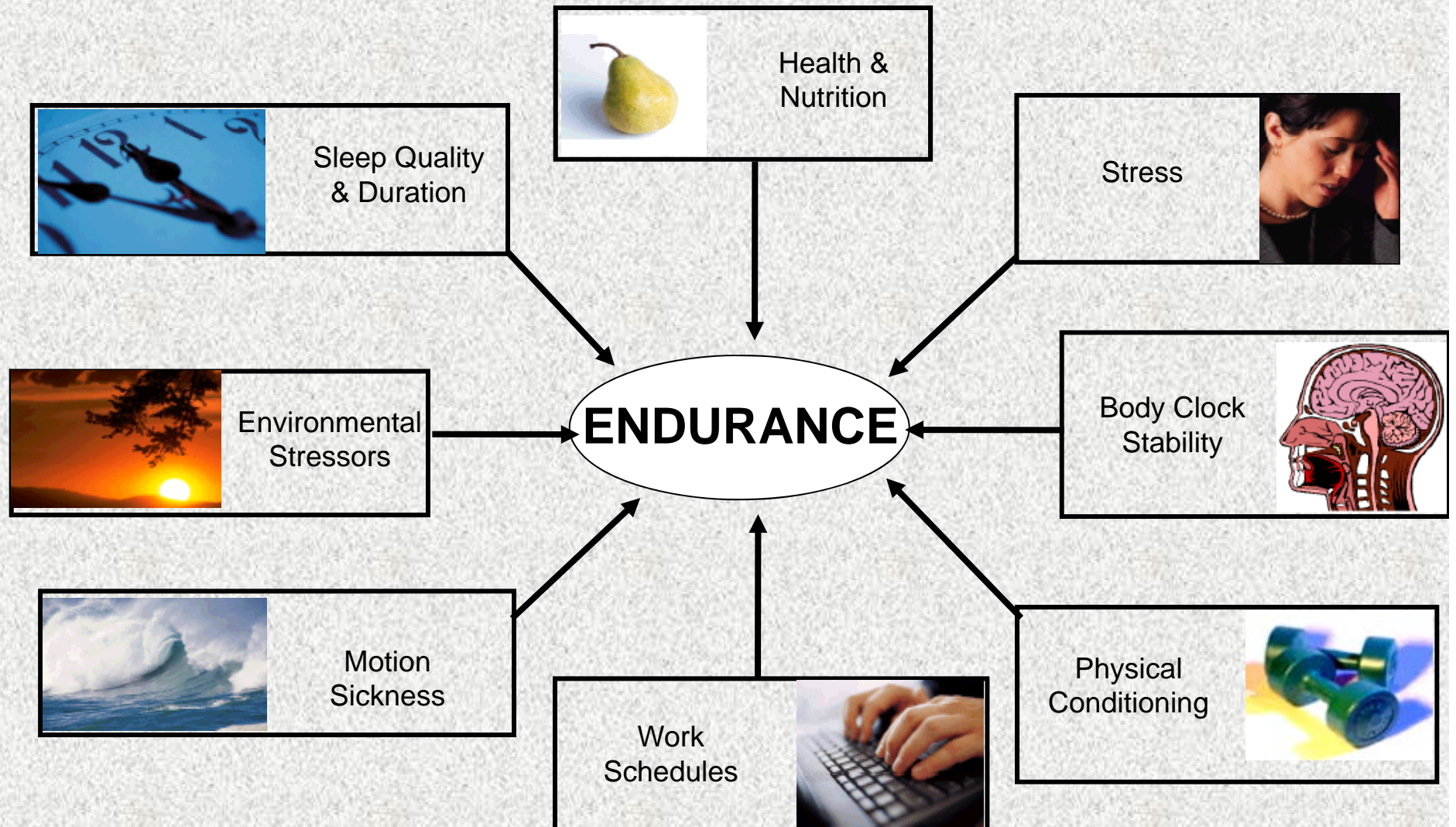
## Crew Endurance Management

- A system for ***managing the risk factors*** that can lead to human error and performance degradation in maritime work environments.

# The CEMS Process



# Endurance Risk Factors



# WHAT CAN CONTRIBUTE TO FATIGUE?

- Poor Nutrition
- Dehydration
- Caffeine abuse
- Nicotine abuse
- Not enough uninterrupted sleep
- Poor sleep quality
- Lack of exercise
- Poor physical condition
- Noise and vibration
- Over the counter & prescription drugs
- Stress (on the job & home)
- Temperature
- Medical conditions

# WHY CEMS?

## Health Issues

- Clinical obesity
- Sleeping disorders  
(sleep apnea, insomnia, narcolepsy, snoring)
- Cardiovascular disease
- Diabetes
- Hypertension
- Gastrointestinal disorders  
(acid reflux, heartburn, digestive disorders)
- Disease of the lower lumbar spine
- Reduced immune system resistance

## Quality of Life

- Less fatigue
- Less of a transition time from vessel to home
- More quality time

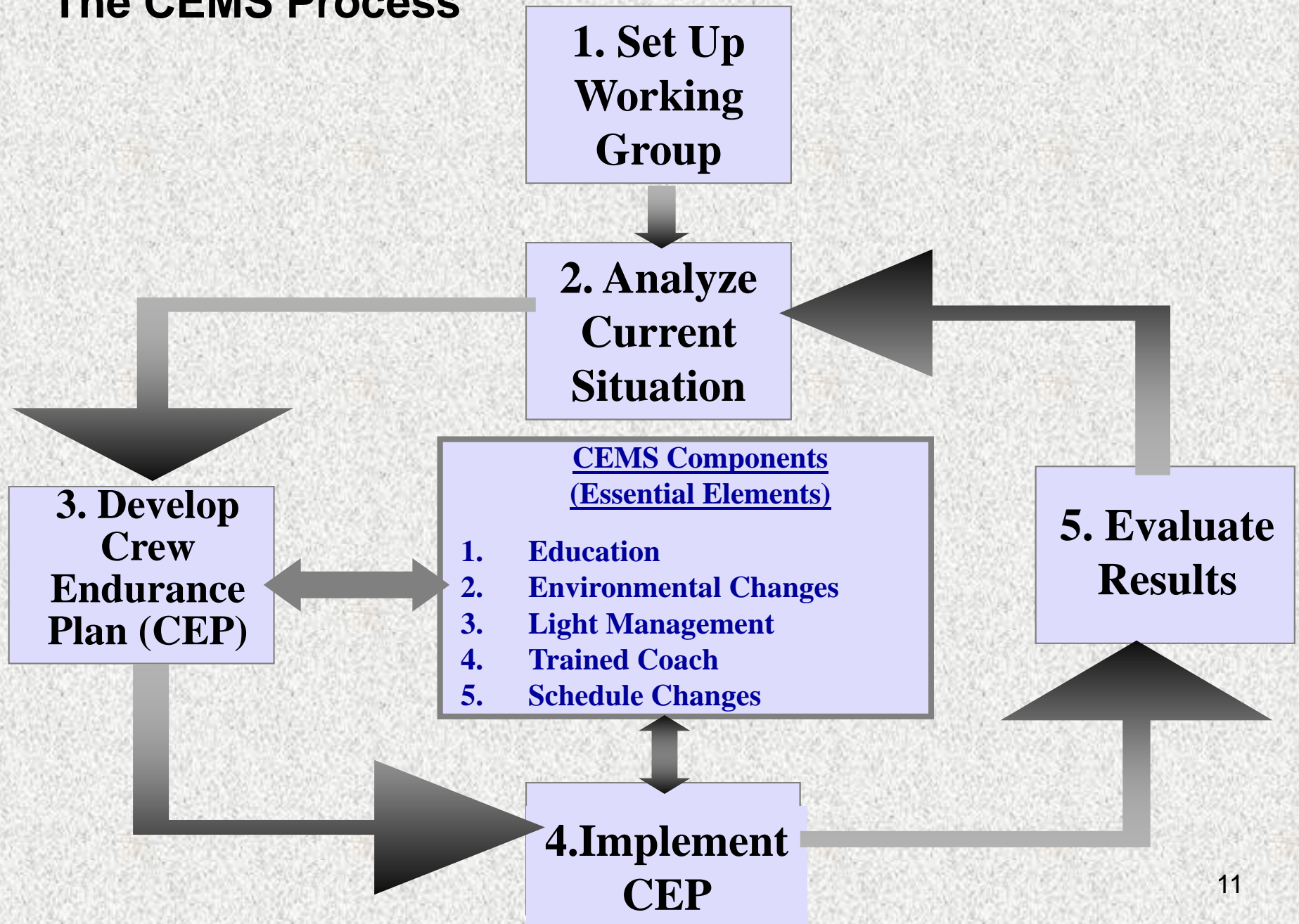
## Reduce Fatigue Related Accidents

- Education to identify fatigue as factors in near misses & accidents
- Identify risk factors & ways to reduce or eliminate risks

# RCP Audit Management Assessment Checklist

- Has the company begun to incorporate elements of CEMS into their vessel operations?

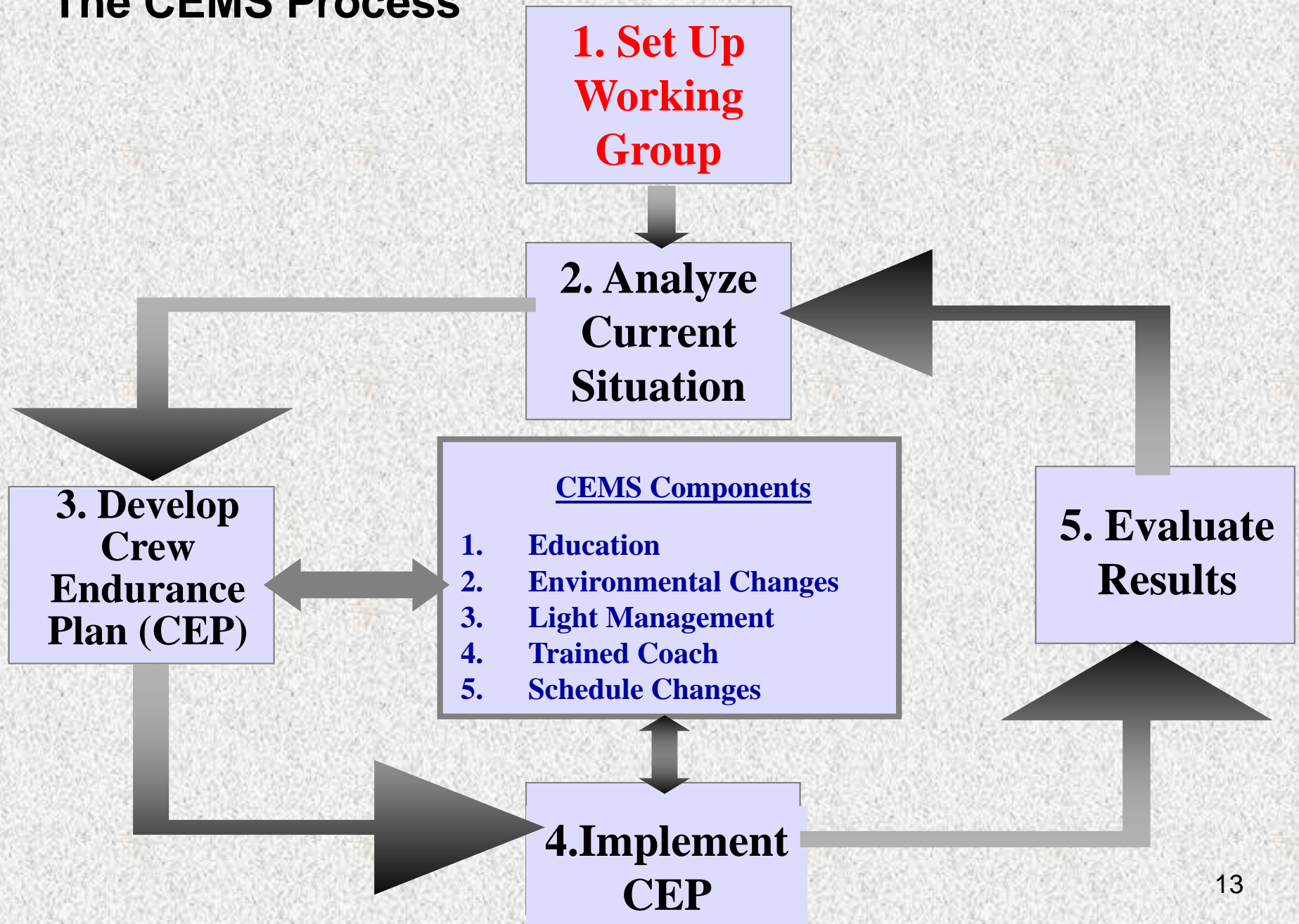
# The CEMS Process



# RCP Audit Management Assessment Checklist

- Does the company have a CEMS Working Group?

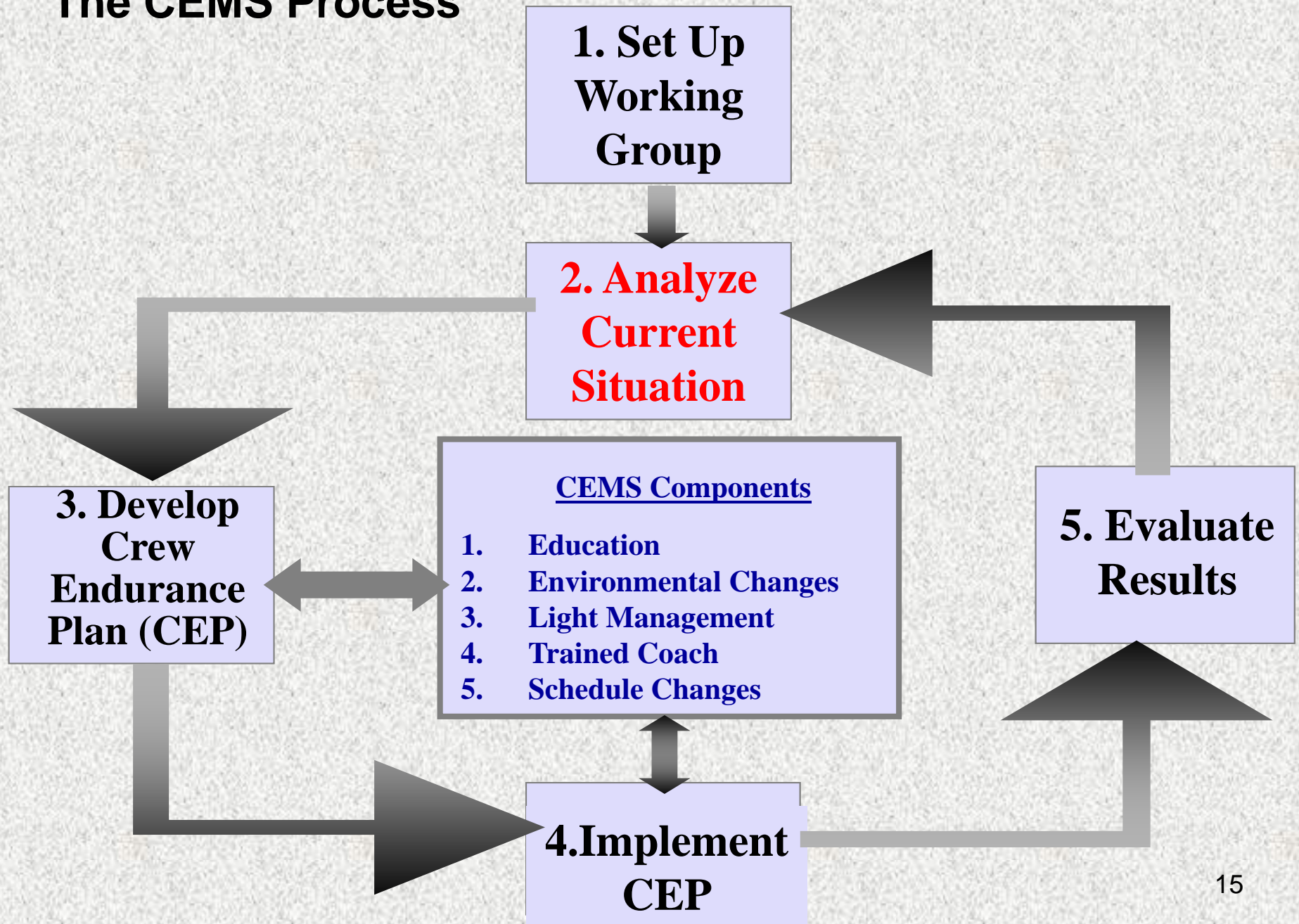
# The CEMS Process



# RCP Audit Coastal & Inland Management Assessment Checklist

- Have there been any changes made onboard as a result of the CEMS risk assessment?

# The CEMS Process



# 15 Risk Factors on the Decision Support System Worksheet

1. Insufficient daily sleep duration
2. Poor sleep quality
3. Sleep fragmentation
4. Scheduling main sleep during the day
5. Changing work/rest schedules
6. Long work hours
7. No opportunities to make up lost sleep
8. Poor diet
9. High workload
10. High stress
11. Lack of control over work environment or decisions
12. Excessive exposure to extreme environmental conditions
13. No opportunity for exercise
14. Family stress
15. Isolation from family

# RCP Audit Coastal & Inland Management Assessment Checklist

- Has the crew heard of CEMS?

# 1. Education

- To obtain the tools & knowledge to identify risks & how to reduce or eliminate them
  - CEMS Awareness Training
  - CEMS Coaches Training
  - Safety Meetings
  - CEMS Newsletters
  - Company Newsletters & Bulletins
  - JSAs & SOPs

# RCP Audit Coastal & Inland Management Assessment Checklist

- Does the crew understand the effect of nutrition and exercise on alertness?

# WHAT CAN CONTRIBUTE TO FATIGUE?

- Poor Nutrition
- Dehydration
- Caffeine abuse
- Nicotine abuse
- Not enough uninterrupted sleep
- Poor sleep quality
- Lack of exercise
- Poor physical condition
- Noise and vibration
- Over the counter & prescription drugs
- Stress (on the job & home)
- Temperature
- Medical conditions

WHAT CAN COME

FAT

EATING SOON  
AFTER  
WAKING

NUTRITION  
&

EXERCISE

HEALTHIER

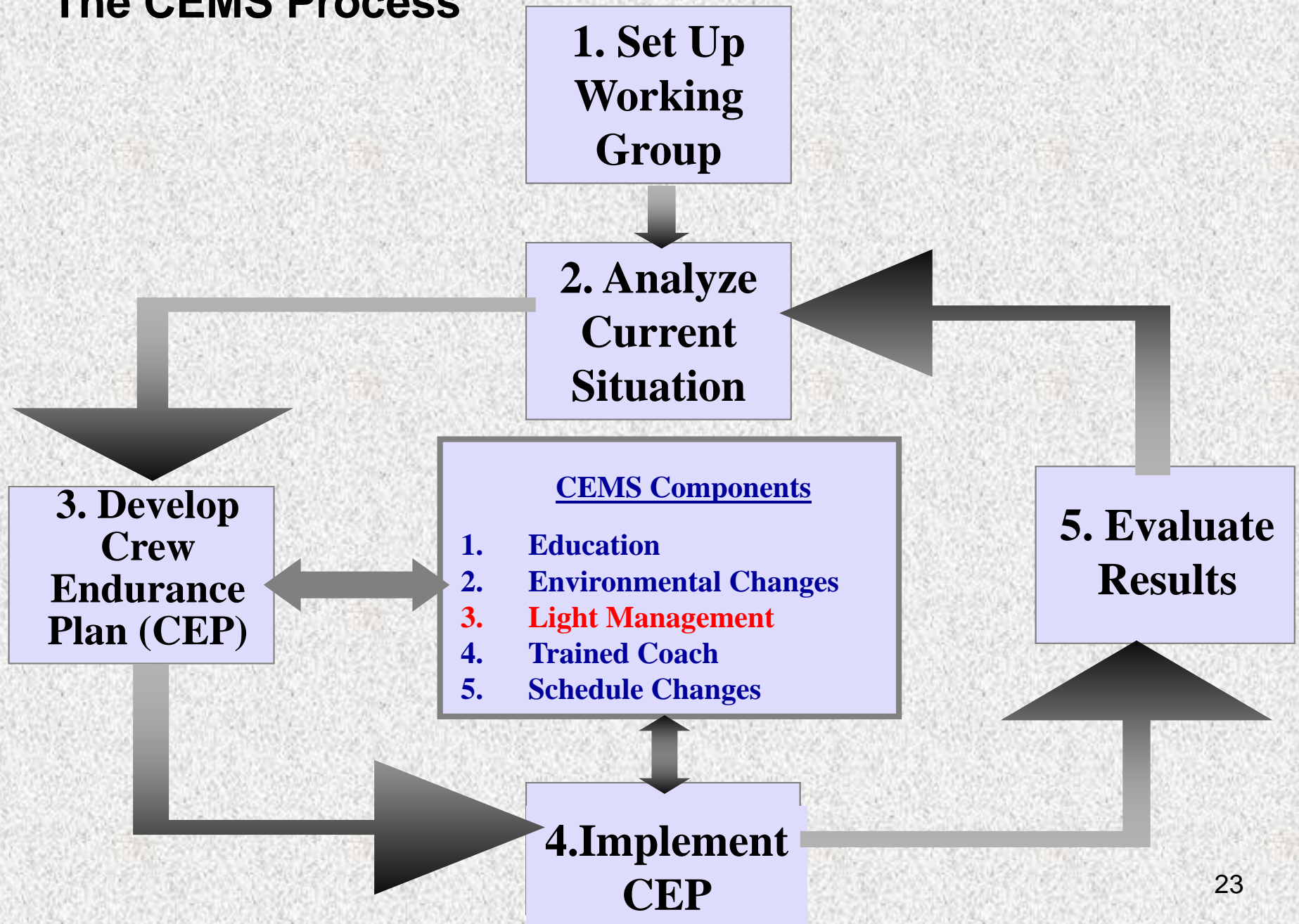
EXERCISE

medical condition

## **2. Environmental Improvements**

- Uncomfortable environments contribute to reduced endurance, concentration and can be damaging.
- Also disrupts quality of sleep.
- Addresses the situations that can contribute to fatigue
  - Room darkening
  - Noise levels
  - Bedding
  - Vibration
  - Lighting (dim & bright lights)
  - Temperature
  - Courtesy Policies (OPERATIONAL IMPROVEMENT)

# The CEMS Process



# 3. Light Management

- Addresses ways to move the Red Zone to reduce fatigue for the back watch & give the forward watch a better quality of sleep.
- Dim lights – When getting off watch
  - Back watch should be seeing bright light before going on at night & dim light up to 3 hours before bedtime.
- Bright lights – When coming on watch
  - Front watch should be seeing dim light (if any light) up to 3 hours before bedtime.

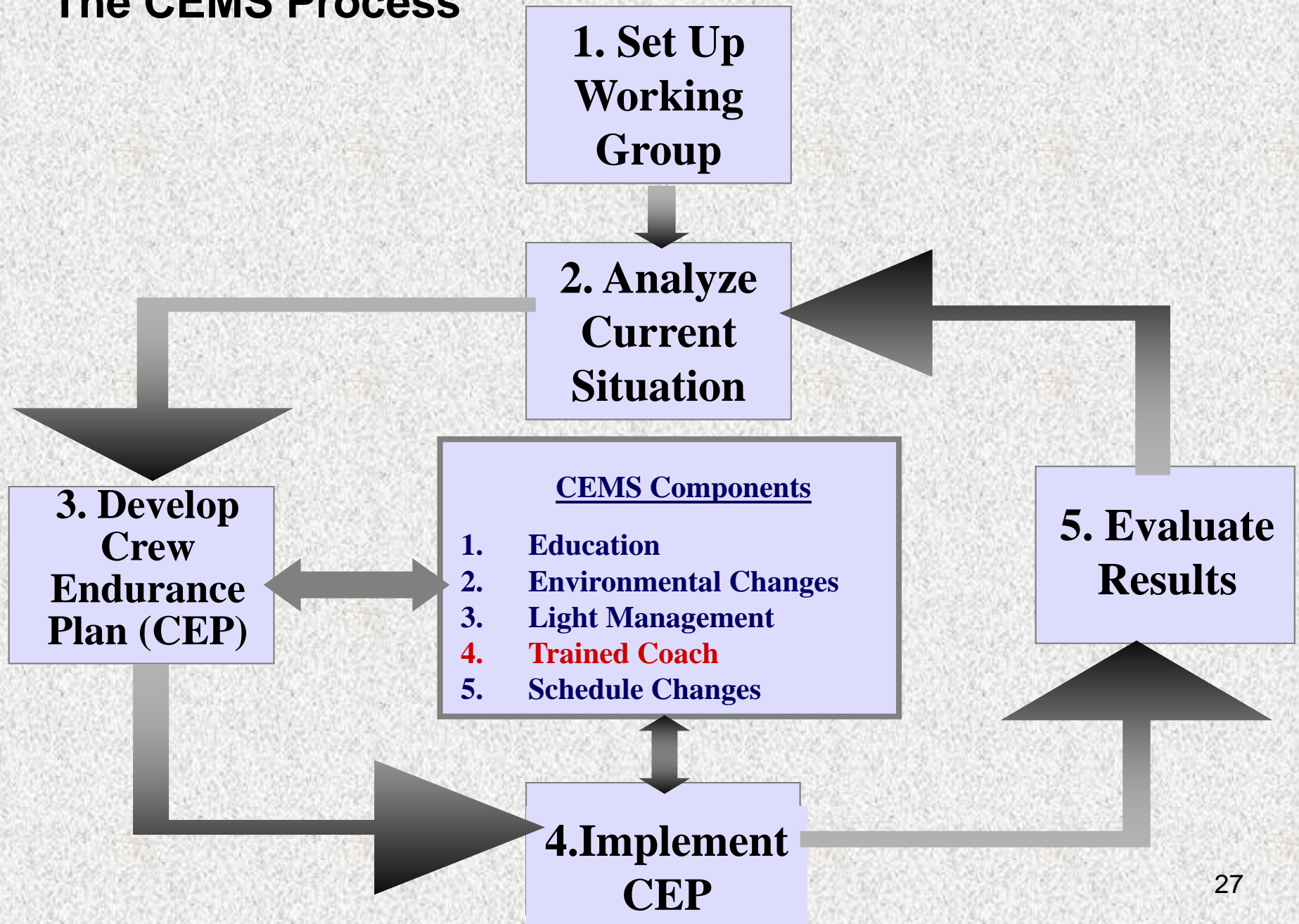
# RCP Audit Management Assessment Checklist

- Does the company have one or more trained CEMS Coaches?

# RCP Audit Coastal & Inland Management Assessment Checklist

- Is there a CEMS Coach aboard the vessel?

# The CEMS Process



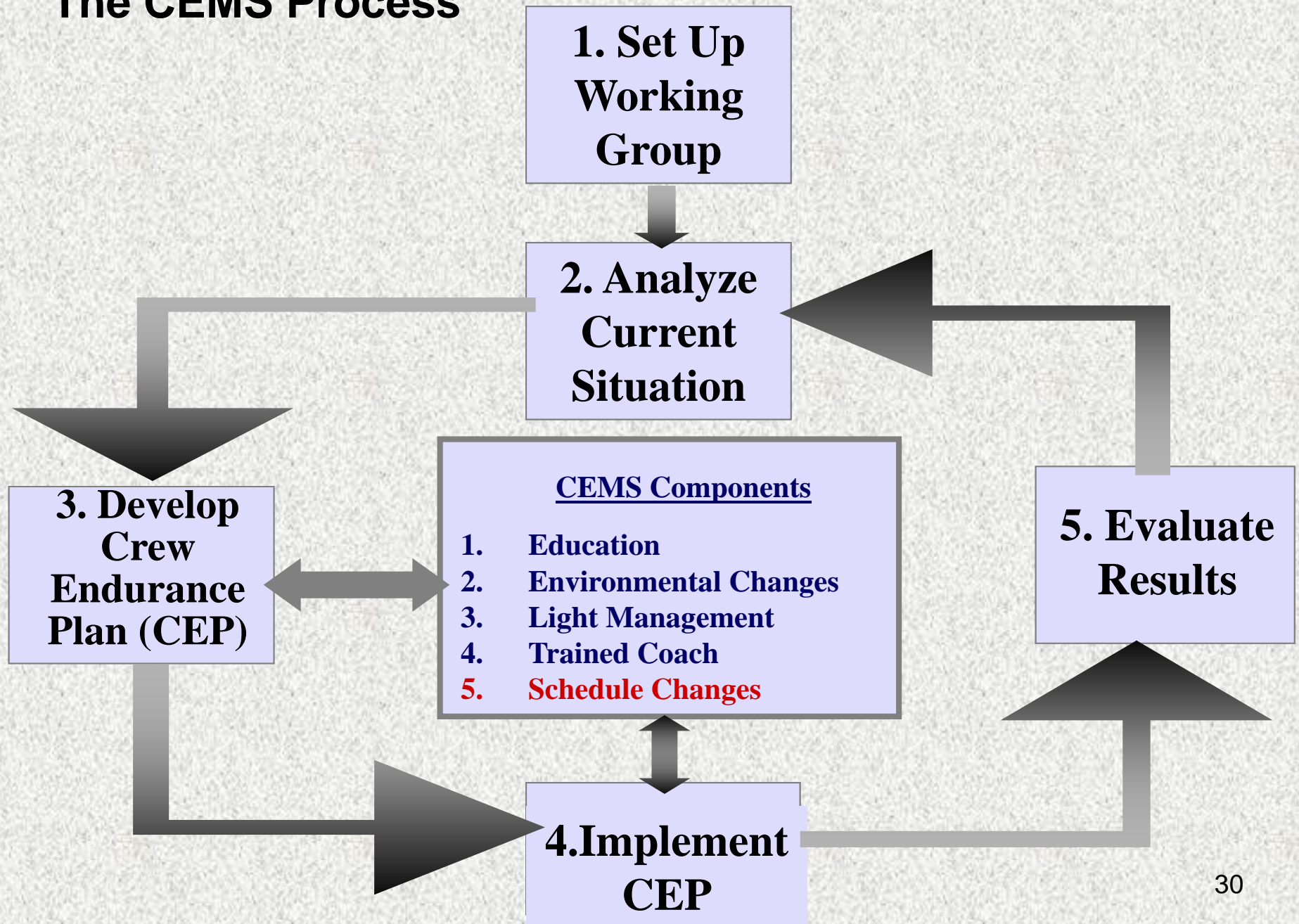
## 4. Coach

- Most important step in the 5 step process
  - Champion CEMS
  - Dispel misinformation
  - Keep information fresh & reinforce reasons for performing these steps
  - Monitor changes
  - Provide consistent support

# RCP Audit Management Assessment Checklist

- Have crews made any modifications to their watch schedules?

# The CEMS Process



## 5. Schedules

- Work, watch & rest schedules can be evaluated to improve endurance
  - Last step in the process
  - Reduces fatigue by giving crewmembers the opportunity to get more sleep
  - Works in conjunction with the other 4 steps
  - Dangerous to change schedules before addressing the other 4 steps

# Overview of CEMS

- CEMS is team based (Management & Vessel Assessment Checklist).
- CEMS is not a one size fits all process & the tools can be customized for each separate organization, division, operation or vessel.

# RCP Audit Management Assessment Checklist

- Is the company familiar with the USCG-AWO Safety partnership, CEMS?
- Has the company begun to incorporate elements of CEMS into their vessel operations?
- Does the company have one or more trained CEMS Coaches?
- Does the company have a CEMS Working Group?
- Have crews made any modification to their watch schedules?

# RCP Audit Coastal & Inland Management Assessment Checklist

- Has the crew heard of CEMS?
- Is there a CEMS Coach aboard the vessel?
- Does the crew understand the effect of nutrition and exercise on alertness?
- Have there been any changes made onboard as a result of the CEMS risk assessment?

# Auditor's Responsibility

- Based on answers to your questions, discussions or observations you will ascertain the progress of CEMS and if any steps have been taken towards progress.

*For more information contact:*

*Jo Ann Salyers*

*Salyers Solutions, LLC*

*504-236-4962*

*salyers\_solutions@hughes.net*