

WATER ENVIRONMENT ASSOCIATION OF ONTARIO

OPERATIONS CHALLENGE

ANNUAL WEAO CONFERENCE & TECHNICAL SYMPOSIUM



WHAT IS OPERATIONS CHALLENGE

- Competitions between various Ontario wastewater teams
- history going back to 1991 (Niagara Falls)
- supported by WEAO
- run by committee of volunteers with various water/wastewater backgrounds



WHAT IS OPERATIONS CHALLENGE

- teams comprise of four wastewater professionals
- compete in five different skills-based events
 - process control
 - laboratory testing
 - pump maintenance
 - collection
 - safety



WHAT IS OPERATIONS CHALLENGE

- events represent skills necessary to operate & maintain wastewater facilities
- been called the “Olympics” of wastewater
- a weighted point system determines overall winner
- scores based on speed, accuracy, knowledge & safety



WHAT IS OPERATIONS CHALLENGE

- the two teams with highest scores
 - go to the national competitions at WEFTEC in the US (under the umbrella of WEF)
 - supported by WEAO
- Ontario has produced a number of teams that went on to compete & win nationally at WEFTEC
 - Dallas, 1996 – 1st & 2nd
 - Orlando, 1998 – 1st



WHAT IS OPERATIONS CHALLENGE

- the Operations Challenge Committee also organizes the annual Professional Water Operator (PWO) tour and the Totally Wasted Game Show (TWGS).

BENEFITS TO OPERATORS AND EMPLOYERS

- Continuous education through practice & competition
- exposure to latest innovations & technologies
- expand & share operational knowledge & experience in different areas
- develop skills & professional careers

BENEFITS TO OPERATORS AND EMPLOYERS

- help grow in job responsibilities
- employment advancement with opportunities to move into management positions
- cultivate teamwork
- build camaraderie & leadership

BENEFITS TO OPERATORS AND EMPLOYERS

- combine sports team mentality with competitive nature & lots of fun
- generate appeal to new comers to our business (helps industry)
- great networking with other industry professionals
- receive 40 hours of training & 4.0 CEUs towards license renewals



BENEFITS TO OPERATORS AND EMPLOYERS

- winning teams get to showcase their skills on a national level
- show that employers are willing to invest in their operators & grow their careers
- educate public about what wastewater operators do
- great exposure for operators & employers alike.



BENEFITS TO OPERATORS AND EMPLOYERS

➤ For more info visit

<https://www.youtube.com/watch?v=AFxrzZuPSyE>

https://www.youtube.com/watch?v=SezXuc8WoaY&list=PLclZ_Qi4oI1HsxwTfg78622h_FT9py9th&index=2

<https://www.facebook.com/groups/45004461914/permalink/10159544402746915/?mibextid=S66gvF>





Questions & Answers (pre Process Event)



PROCESS CHALLENGE

- Showcase process control skills of competing teams
- comprises two components
 - “written exam” challenge – timed at 20 minutes
 - “process simulation” challenge – timed at 15 minutes
- designed to be long enough so that teams do not run out of questions to answer or tasks to achieve

PROCESS CHALLENGE

- not expected that teams complete entire challenge (answer all questions or tackle every simulation problem)
- goal is to see who can answer most questions with fewest mistakes
- types of questions & difficulty level are matched to points awarded for getting correct answers

PROCESS CHALLENGE

- written exam includes
 - multiple choice
 - word matching
 - process math calculations
 - advanced scenario questions
- solving the more complex questions (process math & scenario problems) is worth more than the simpler questions (multiple choice & word matching)

PROCESS CHALLENGE

- up to team members to develop strategy regarding which questions to answer in the allotted time
- goal is to achieve the highest final score.

PROCESS CHALLENGE

- For more info visit
https://www.youtube.com/watch?v=QjWniPWmOsA&ab_channel=WaterEnvironmentFederation









Process Event





Process Event





LAB CHALLENGE

- Team members are required to complete various analytical tasks pertaining to day-to-day treatment & plant operations
- tasks include
 - calibration of YSI Xylem MultiLab Meter (based on conductivity)
 - analysis of TSS (gravimetric method) & TDS
 - various process calculations

LAB CHALLENGE

- calculations include
 - mass loading
 - mass balance
 - sludge age/SRT/MCRT
 - wasting rate
 - SVI
 - removal & capture efficiency of solids handling process
 - overall treatment efficiency

LAB CHALLENGE

- other components of event
 - safety
 - good housekeeping practices.
- For more info visit
https://www.youtube.com/watch?v=OlZMI8Yd8-c&ab_channel=WaterEnvironmentFederation.





Lab Event







PUMP CHALLENGE

- Simulates a response to an issue at a pumping station
- premise
 - pump station is in business/restaurant area
 - restaurant grease trap program has been sub-par at best
 - service area has been problematic with FOG (fats/oil/grease) as well as rags/debris/wet wipes creating clogs & line blockages

PUMP CHALLENGE

➤ scenario

- pump station team receive high level alarm via telemetry in problem area
- high-level alarms have been cleared & acknowledged several times
- SCADA trends show pumps cycling as programmed but continue to hit high-level set-point alarm(level sensor activated)

PUMP CHALLENGE

- scenario – continued
 - also confirmed that station has yet to receive high-high-level back-up float so visual & audible alarms were not activated
 - upon arrival, crew determined abnormal build-up just below level sensor
 - wet well pumps & conditioning pump appeared to be operating well, but adjustment/direction of conditioning pump was required

PUMP CHALLENGE

➤ the plan

- mitigate alarms
- perform full service of station & control panel
- assemble gantry
- remove pump, check & service (replace impeller, corroded hardware, pump nozzle)
- check/service motor
- check/service control panel

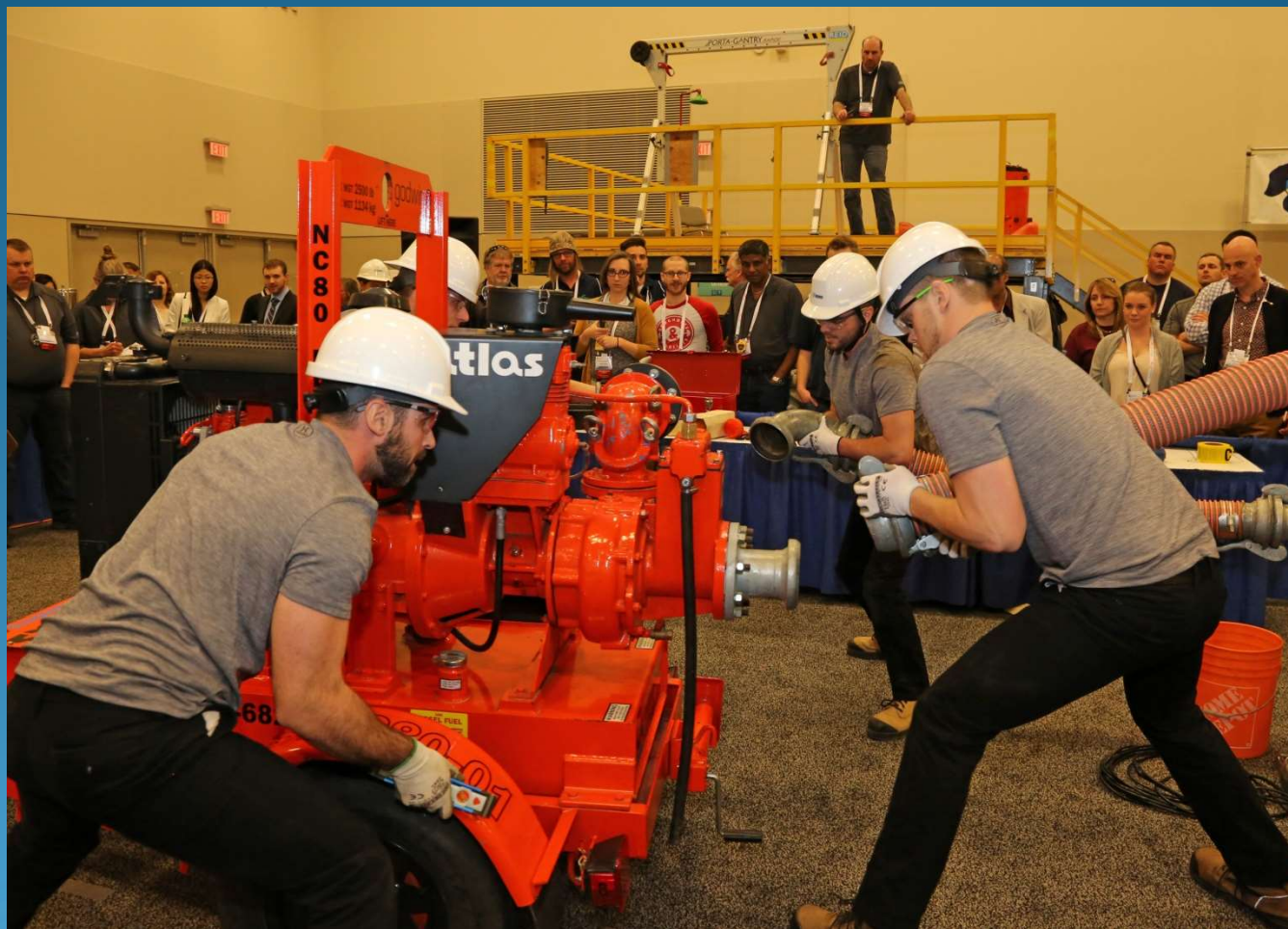
PUMP CHALLENGE

- the plan – continued
 - remove pump from service table & lower back in station
 - disassemble gantry
 - restore power to control panel
 - document all service results in CMMS.

PUMP CHALLENGE

- For more info visit
https://www.youtube.com/watch?v=lpF4E4Epl3c&ab_channel=WaterEnvironmentFederation









Pump Event





COLLECTION CHALLENGE

- Simulates connecting 4-inch PVC lateral sewer to an existing 8-inch PVC sewer pipe while in service
- also programming an automatic sampler

COLLECTION CHALLENGE

- starts with small-leak in a PVC pipe that represents an in-service pipe (wet pipe)
- another section of dry pipe must be used to make repairs on the leaking wet pipe
- competing teams have to cut & remove measured length of pipe from both the wet and the dry PVC pipes

COLLECTION CHALLENGE

- cut section from dry pipe will include an Inserta Tee™
- will be used to replace section removed from wet pipe
- have to secure connection with flexible repair couplings & hose clamps

COLLECTION CHALLENGE

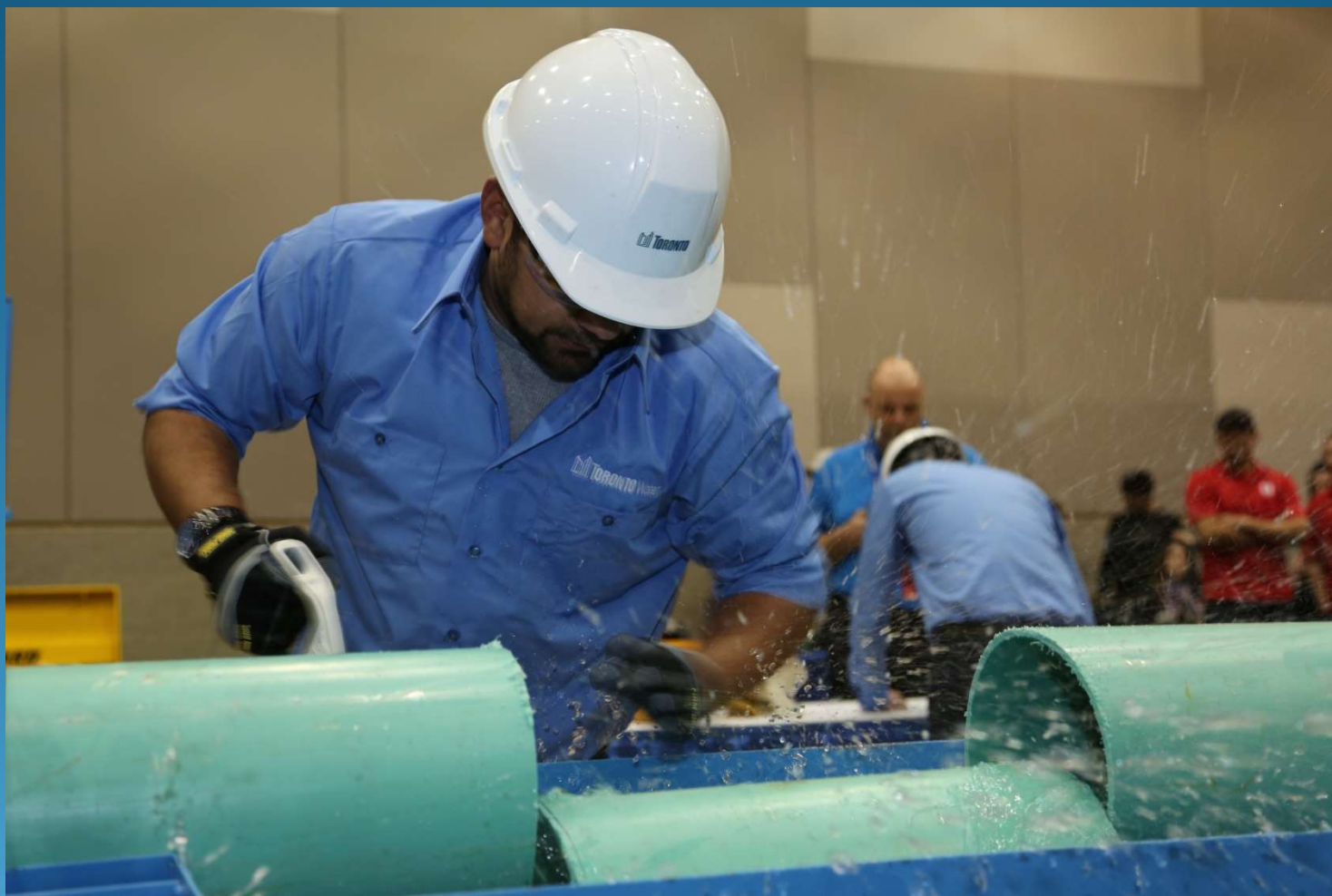
- has to be completed while water is running in pipe
- once completed, judges will perform pressure test to determine if connections made are water tight
- competitors must also program automatic wastewater sampler & ensure it is working properly.

COLLECTION CHALLENGE

- For more info visit

https://www.youtube.com/watch?v=vTk21PGj6Xk&ab_channel=WaterEnvironmentFederation.





Collection Event





Collection Event





Collection Event



SAFETY CHALLENGE

➤ Scenario

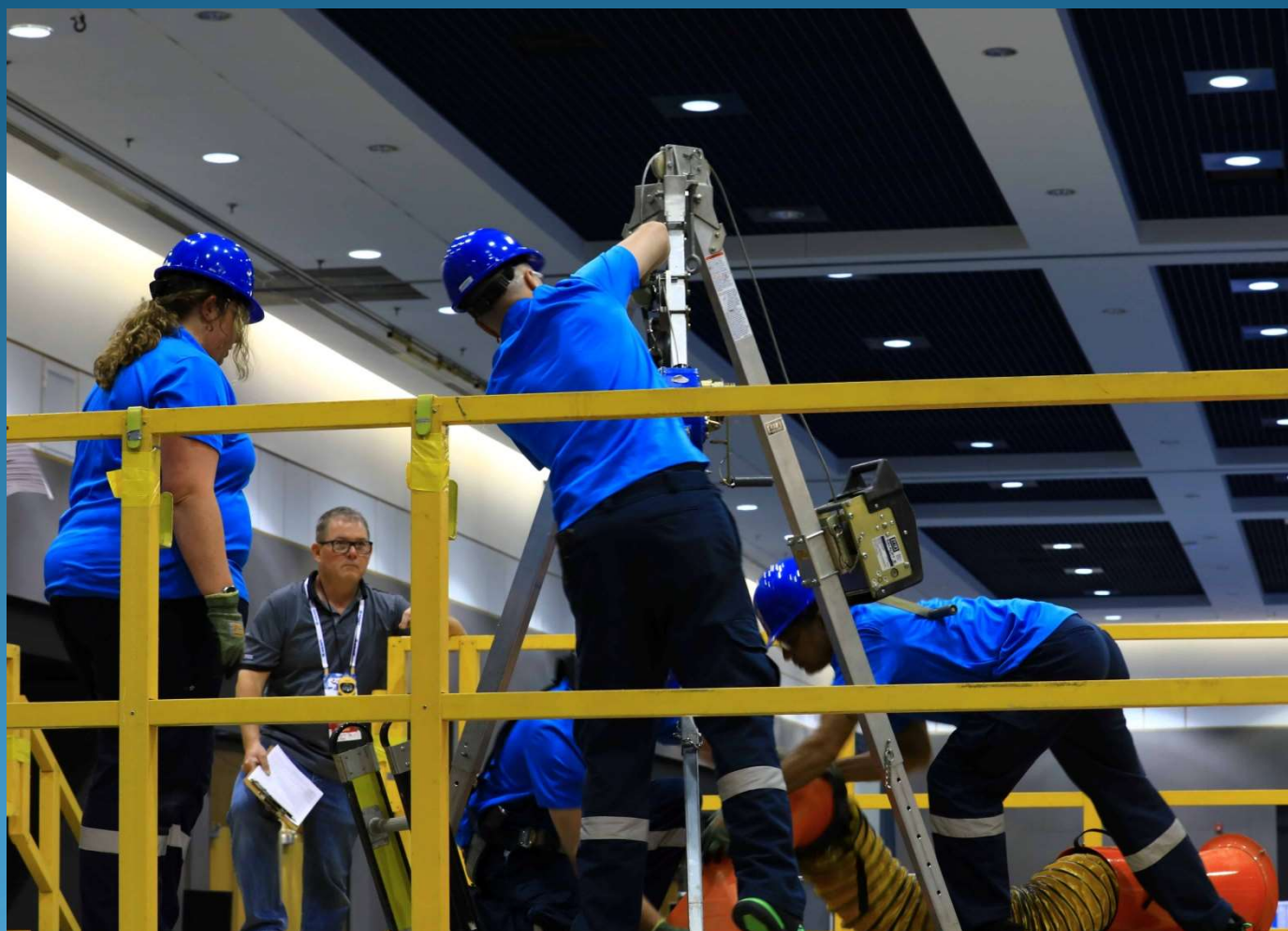
- a co-worker collapses inside a manhole & found at bottom of lift station (confined space) unconscious
- suspected that he/she was overcome with unknown gas or lack of oxygen due to worn 4-inch check valve gasket in station

SAFETY CHALLENGE

- in response to call, team members must
 - enter confined space, test atmosphere, perform rescue operation
 - use bag stored in equipment area to lower tools & equipment
 - close two gate valves, lock-out & tag-out
 - repair check valve, replace flapper & gasket
 - put line back into service.

SAFETY CHALLENGE

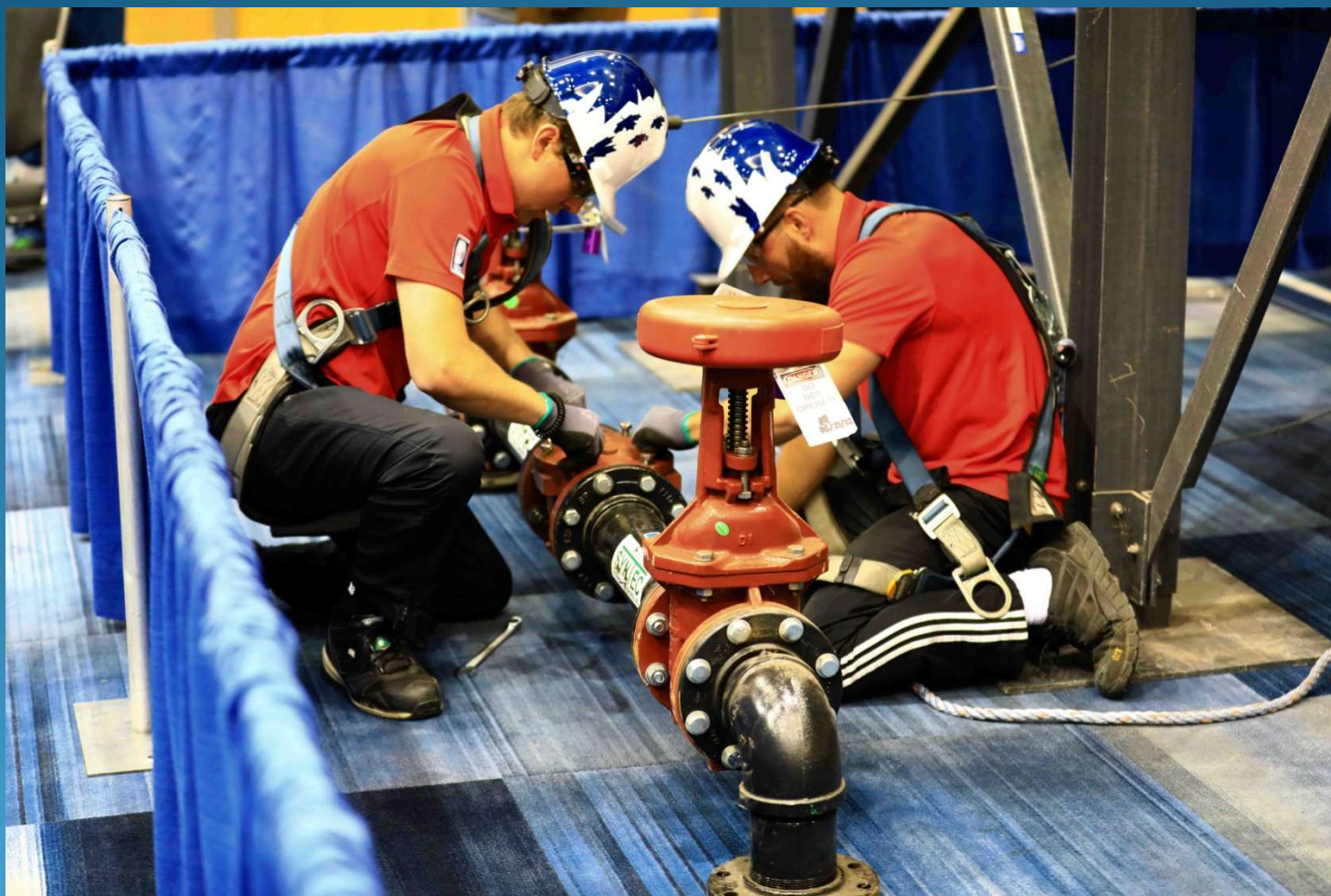
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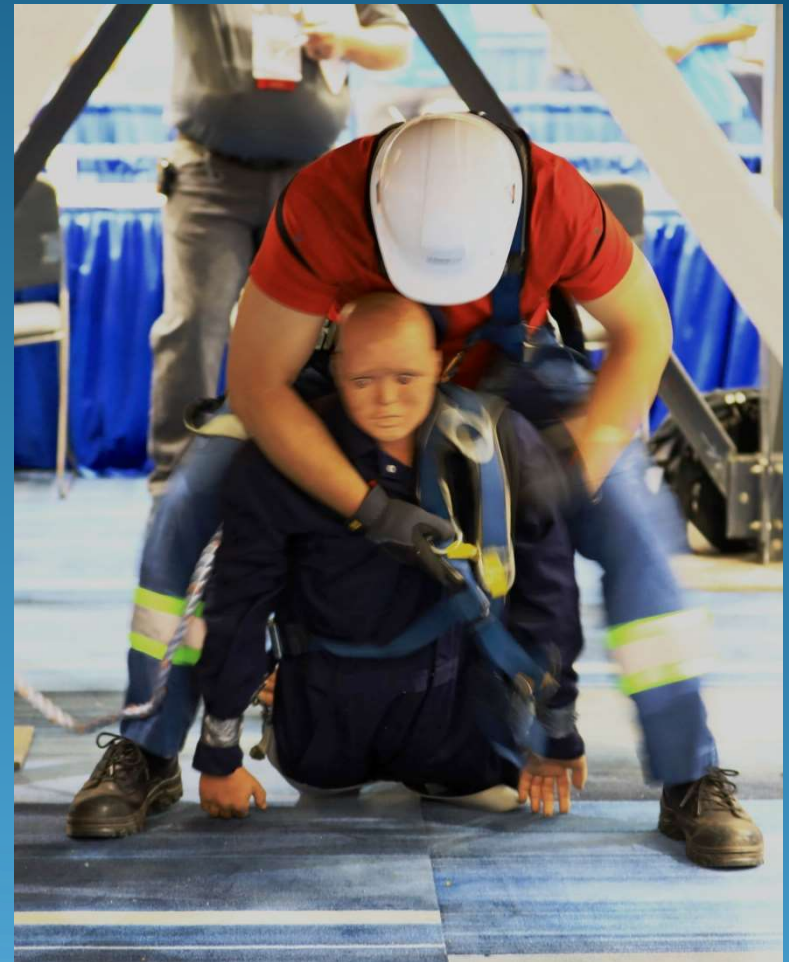


Safety Event









Safety Event



TOTALLY WASTED GAME SHOW

- A heart-pounding, nerve-jolting and a popular crowd-pleasing game
- this is where players compete for the coveted “Golden Toilet” award
- the game takes place on the conference floor on the last day and after the conclusion of the Operations Challenge events

TOTALLY WASTED GAME SHOW

- everyone and anyone is invited to sign-in to the free on-line game-based platform “Kahoot” where this multiple choice Jeopardy-style game is hosted
- players battle head to head to test their knowledge in everything WEAO (conference trivia, wastewater, host city history & team sports, and much more)
- game clues are found around the conference floor



TOTALLY WASTED GAME SHOW

- if you have what it takes to experience lots of excitement and have some fun before the closing ceremonies, the Totally Wasted Game Show is the game to play!

AWARDS PRESENTATION





Awards Presentations





Awards Presentations





Awards Presentations





Awards Presentations



GETTING INVOLVED

- Many ways to get involved with Operations Challenge
 - participation in events
 - judging
 - setting up & tearing down
 - score keeping
 - supporting teams.

GETTING INVOLVED

- To learn more contact
 - Krista Thomas – Chair & Lab Coordinator
 - Jeff Johnson – Past Chair & Pump Coordinator
 - Hany Jadaa – Past Chair & Process Coordinator

or

- visit our website – weao.org/operations-challenge/

