

# Savannah River Site Construction Safety Lessons Learned



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# Savannah River Site



- 198,000 acres= 310 square miles
- DOE/SRS and NNSA/SRS
- Contractors:
  - Washington Savannah River Company (WSRC)
  - Wackenhut Services Incorporated (WSI)
  - Parsons
  - University of Georgia
  - U.S. Forest Service
- SRS workforce: 10,300 (as of 10/31/06)
  - Approximately 86% WSRC
- Annual budget ~ \$1.4 billion
- Future missions
  - MOX – Site preparation under way
  - Pit Disassembly and Conversion
- Possible future missions
  - National Energy Park
  - Hydrogen fuel



# DOE Program Offices at SRS



## National Security

- Tritium Technology
- Plutonium Technology
- Homeland Security Support
- Non-Proliferation Technology

## Nuclear Energy

- Hydrogen Storage Technology
- Global Nuclear Energy Partnership

## Office of Science

- International Energy Project

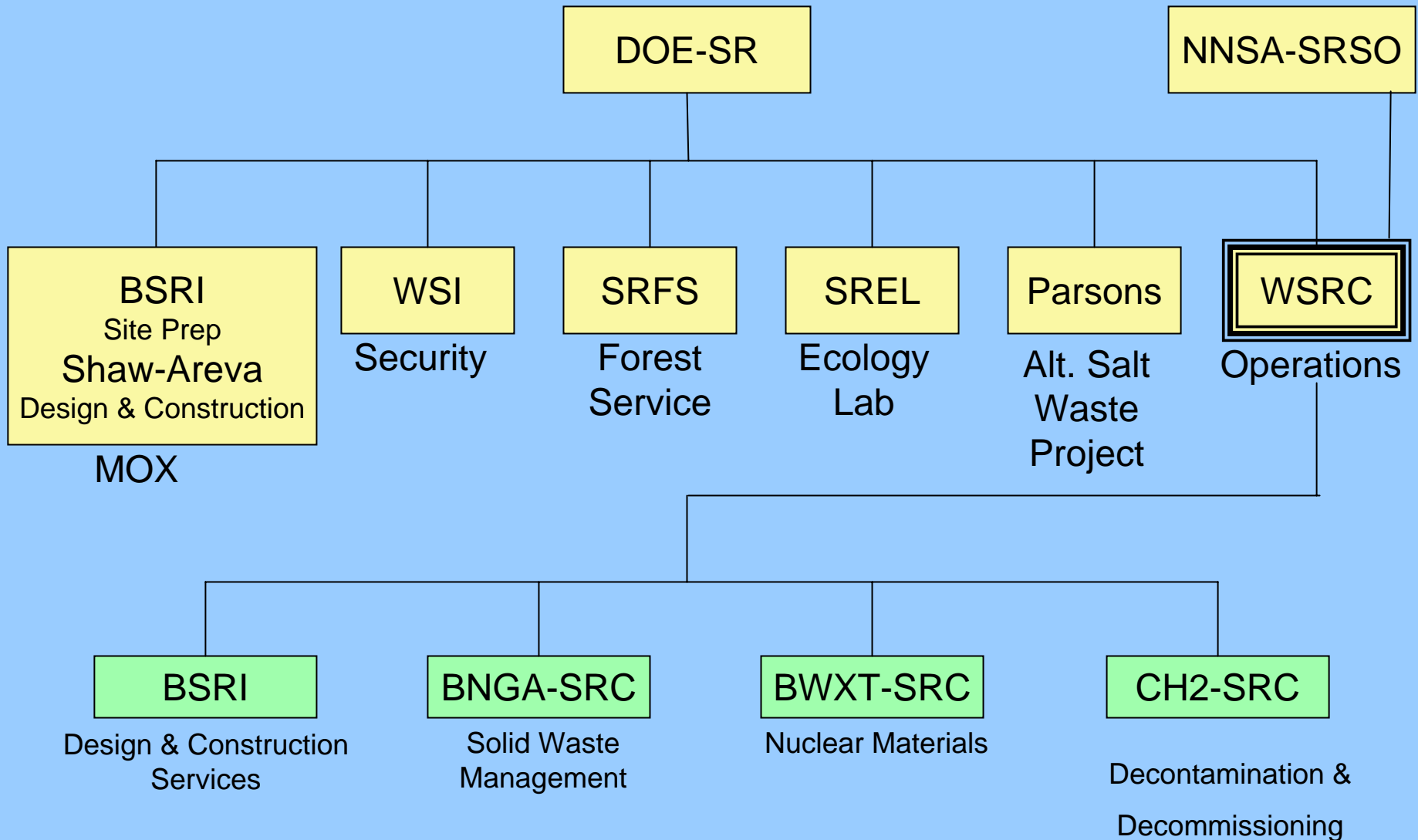
## Environmental Management

- Materials Stabilization and Disposition
- Cleanup Technologies



*Environmental Management Operations Lessons Learned*

# SRS Contractors



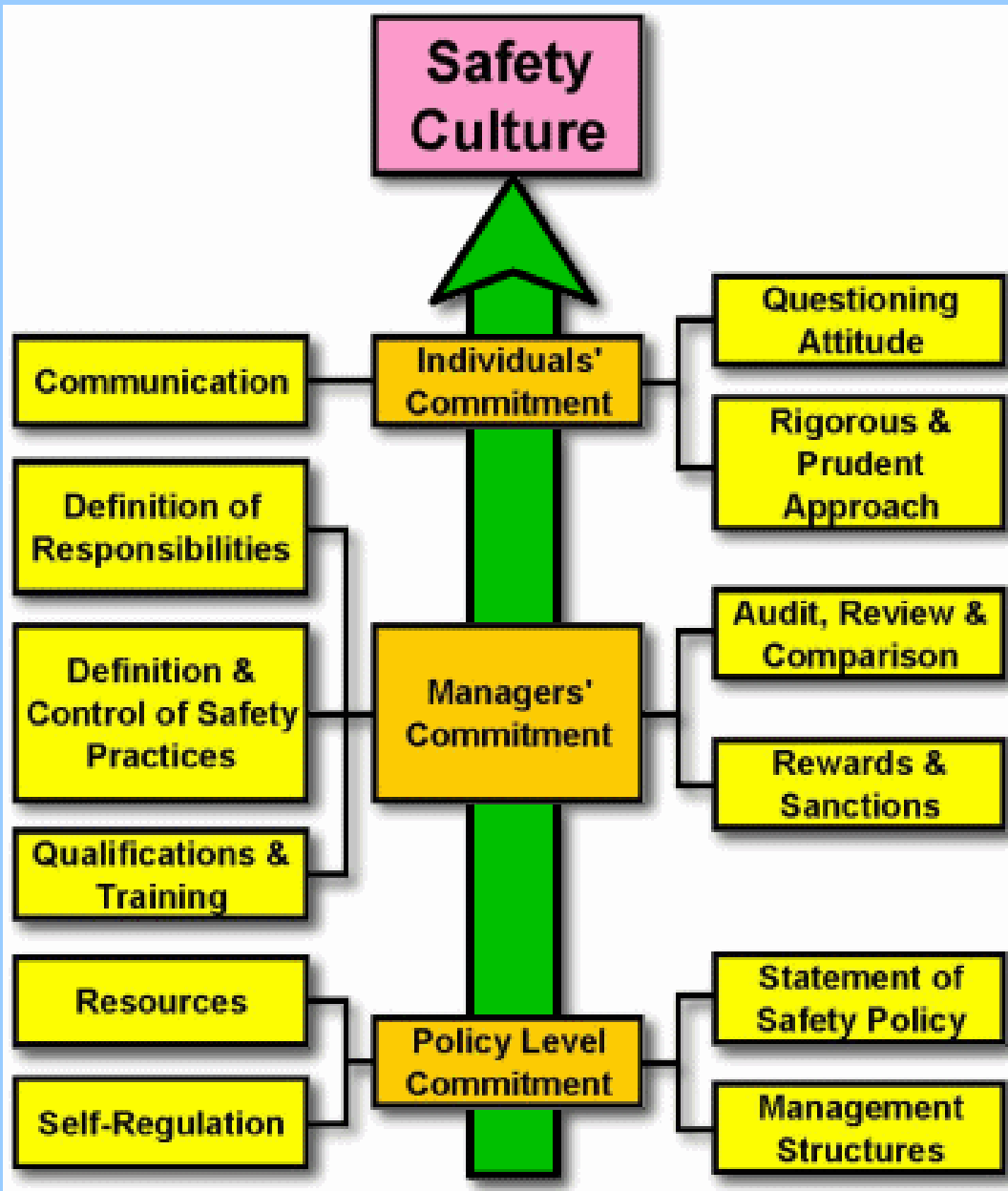
# Construction Snapshot

- **Ongoing Projects**
  - 3013 Project
  - General Separations Area Consolidation Unit
  - D & T Area Closure Projects
  - Design Basis Threat 2005
  - Saltstone Vault #4 Organic Mods
- **Recent Key Construction Project Completions:**
  - Tritium Facility Modernization and Consolidation.....May 2003
  - High Enriched Uranium Blend Down.....Sep. 2003
  - Tritium Extraction Facility.....Mar. 2005
  - Glass Waste Storage Building.....Dec. 2005
  - K-Area Interim Storage.....Aug. 2006
  - Design Basis Threat 2003.....Sep. 2006
  - Modular Caustic Side-Solvent Extraction Unit..... Nov. 2006
- **Current Performance (for FY06):**
  - Schedule: SPI = 0.99 (slightly behind schedule)
  - Cost: CPI = 1.08 (8% under budget)

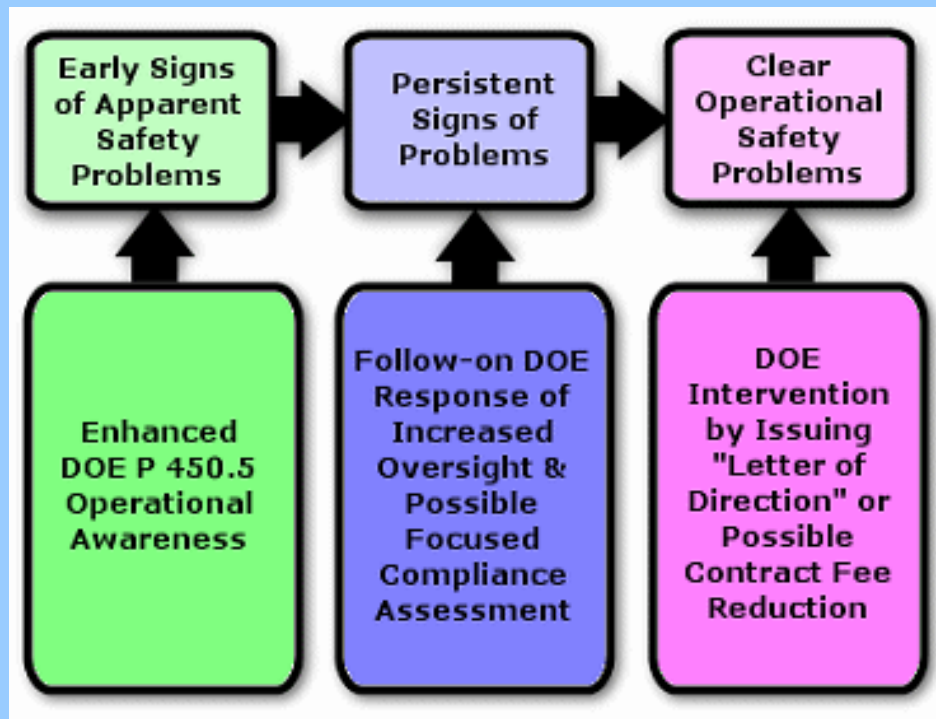


# Safety Culture

- SRS has established this model for all contractors and employees regardless of who performs the work



# SRS Safety Approach



- DOE Leadership
- Open lines of communications with Federal and contractor staff
- Personal commitment

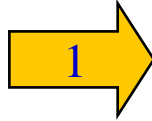


# Safety Culture

## SRS strives to be the complex leader in ISM

Define Scope of Work

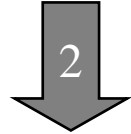
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- Design Change Request
- Work Package/Safe Work Permit
- Modification Traveler
- R&D Need/Work Request
- Construction Execution Plan
- Deactivation Project Plan

Analyze Hazards

2



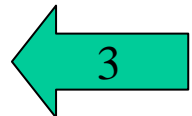
- Unreviewed Safety Question
- Assisted Hazard Analysis
- Pre-Job Briefing/Walkdowns
- ALARA Evaluation
- Criticality Safety Evaluation
- R&D Hazards Screening Checklist
- Process Hazard Review



Perform  
Work  
Safely

Controls

3



- Authorization Basis
- Regulatory Agreements
- Engineering and Administrative Controls
- Waste Acceptance Criteria
- Conduct of Operations/Procedures
- Work Package Management
- Safety, Radiological, and Hygiene Monitoring
- Control of Materials and Tools

- Lessons Learned Program
- Self-Assessments
- Independent Assessments (FEB)
- Performance Indicators
- Post-Job Summaries
- Management Observations
- Site Trending, Analysis, and Reporting

Feedback

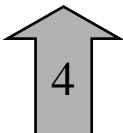
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- Procedure Compliance
- Work Package Verbatim Compliance
- Time Out Program
- Stop Work Authority

Perform  
Work

4





# Safety

## SRS Vision

- Our Vision is an injury-free workplace
- Vision is becoming reality
  - WSRC and BSRI have currently worked a collective **31 million** consecutive hours since their last injury requiring days away from work

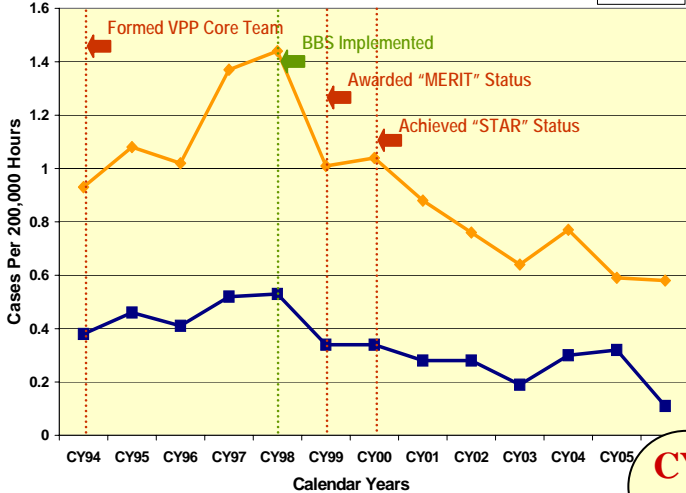


# Safety

## CY 06

### Outstanding Performance

SRS Operations - Injury Rates  
CY1994 - YTD CY2006



**CY-06**

**\*BSRI Construction has worked more than 19,000,000 hours without a Lost Workday Case**

**Best performance in WSRC history**

- TRC 0.58
- DART 0.11

**Recognition**

- America's 12 Safest Companies (2005)
- South Carolina Manufacturing Association
- VPP Legacy of Stars Award (2006) – highest

**Completed 50 consecutive days w/o a TRC**

- Previous record was 37 days

**Record setting 184 days w/o a DART**

- Previous record was 90 days

**Reduced TRC Rate 62% by BBS implementation**

**Radiation intakes and ORPS Reportable contaminations**

- Second lowest year on record

**Cumulative radiation exposure is 104 man-Rem, 14% below 2005**

- Lowest since startup of radiological operations at SRS



# Safety

## Project Highlights

- **GWSB #2**
  - Major construction activity managed by DOE-SR
  - Heavy steel erection resulting in multiple fall hazards
  - Significant hoisting/rigging scope
  - Project completed with one minor medical treatment case
- **777-10A D&D**
  - Radiological hazards
  - Latent & acute health hazards
  - Industrial hazards
  - Project completed injury-free
- **Industrial Safety Lessons Learned**
  - Anticipate hazards
  - Emphasis continuous improvement
  - Track and trend performance
- **Radiological / Nuclear Safety**
  - Training workforce
  - Plan and execute work with discipline



*Environmental Management Operations Lessons Learned*

# Safety

## Project Highlights (Con't)

- **What Works**
  - Focus on safety
  - Influencing workforce outside SRS
  - Review all incidents/injuries for lessons learned
- **What's Next?**
  - Mature culture utilizing Human Performance Improvement
  - Focus on routine activities
  - Increase accountability
  - Strengthen feedback and improvement
  - Continue recognition of performance



**Largest Entity in DOE Complex  
with VPP Star Status**



# Safety

## Keys to Success

- **Experienced Work Force**
  - Extensive training
  - Experienced and diverse skill
  - Focus on Fitness for Duty
- **Worker Involvement**
  - Encourage participation
  - Frequent two-way communication
  - Weekly safety meetings
  - Pre-job briefs
  - Recognition
- **Technology Improvements**
  - Excavation
  - Electrical Safety
  - Remote Worker Tracking



**Vacuum Excavator  
improves electrical safety**



# Safety

## Keys to Success (con't)

- **Management Team**
  - Accountable for personnel safety
  - Clear expectations
- **Rigorous Conduct of Operations**
  - Hazards Analysis / Work Planning
- **Partnership**
  - Subcontractor Management Program
  - Building Trades / Subcontracts
- **Embraces Sharing**



Jeff Allison kicks off  
Quarterly SRS Safety Forum



# Safety

## Keys to Success (con't) What we could have done better

- **Control Schedule Driven Mentality**
  - Provide Safety Leadership Training
  - Clear expectations (budget, schedule, and success tied to safety performance)
  - Encourage integrity, courage, & leadership as a management value
- **Establish Consistent Accountability and Consequences Sooner**
  - Supervisors and employees accountable for personnel safety
  - Craft supervisors instructed to take action for non-compliances
  - Clear expectations
  - 100% participation
- **Address Complacency**
  - Recognize complacency as human factor issue
  - Highlight EVERY injury including minor ones
  - Treat near misses and minor incidents as important data points
  - Focus on behavior and hazard awareness (Develop subject, seasonal, and behavior awareness programs)



# Future Challenges

- **What's Next**

- Keeping focus on safe performance with contract rebid
- Successful integration of multiple PSO's at SRS
- Maintaining healthy workforce
- Taking safety to the next level by:
  - Utilizing Human Performance Improvement
  - Retooling BBS
  - Benchmarking
  - Mentoring

**MAYO CLINIC HealthQuest**  
NOVEMBER 2006 *Answers for healthier living*

### Menu for better eating habits

During the holidays, you may face situations that tempt you to eat more than usual. You might consume larger meals at family gatherings, have dessert with visitors and drink more calorie-laden beverages.

You may be very aware of these holiday eating triggers. But the reality is, your surroundings affect your eating habits the rest of the year, too. Do you often have a snack while watching TV? They support the movies more out of habit than hunger? Eat more food with certain friends?

Your mood, your eating is probably driven not just by hunger, but also by habit. Researchers are beginning to better understand how your surroundings might affect your food choices. Some findings may cause you to examine your eating patterns. Consider these tips.

- **Turn off the TV.** TV viewing strongly affects how much and what people eat. In one study, college students ate the equivalent of one extra meal on days when they ate with the TV on. In another study, people were less apt to eat fruits and vegetables and more apt to eat fatty foods when they ate in front of a TV. To promote better eating habits, set aside time to focus on your meals.
- **Slow down.** Eating too quickly can cause you to eat too much. It takes about 20 minutes for your brain to signal your stomach that you've eaten enough.
- **Keep food out of sight and keep high-calorie foods out of the house.** Availability of

food is one of the strongest factors in determining how much a person eats. To limit intake, keep high-calorie foods stored out of sight. During meals, leave serving platters in your kitchen rather than on the table. When grocery shopping, skip the aisles with high-fat, high-calorie treats.

- **Pay attention to portions.** Larger portion sizes encourage people to eat more. Larger dishes also seem to increase intake. Start with an appropriate serving on a small dish.
- **Limit your options.** Variety of food can increase consumption. Focus on limiting snack and dessert choices in particular.
- **Eat at home.** People eat more food in restaurants than at home. Consider limiting how often you eat at restaurants. When you're eating out, decide what and how much you're going to eat before you start and favor the most food to go.
- **Follow others' healthy habits.** A companion's food choices can influence your choices. If your dining companion eats moderately and selects healthy foods, you're more likely to do so, too.

**Don't skip breakfast!** Starting the day with a meal generally results in less eating overall.



**Healthquicks**

If the stress and expense of holiday gift giving causes you anxiety, keep it simple this year. Before you go shopping, decide how much money you can afford to spend on gifts. Then stick to your budget. Don't try to buy happiness with an avalanche of gifts. Consider some savvy alternatives. Donate to a charity in someone's name, attend a holiday event, give homemade gifts or start a holiday gift exchange.

**Men, beware: Did you know that bone density loss (osteoporosis) affects you, too?** In fact, one-third of men have osteoporosis by age 75. You can help prevent bone loss and reduce the risk of hip and other bone fractures by getting enough calcium and vitamin D in your diet. If you don't get the recommended amounts of these essential nutrients naturally, talk to your doctor about taking supplements. Men age 49 or younger should get 3,000 milligrams (mg) of calcium and 200 international units (IU) of vitamin D a day. Men age 50 or older should get 3,200 mg of calcium. Men ages 50 to 70 should get at least 400 IU of vitamin D a day, while men age 71 and older should get at least 600 IU of vitamin D a day. With the recent attention to vitamin D's importance, requirements may increase in the future.

What's healthy for you?	Score
Holiday Blessings	4
Wishes of wrapping	6
Ready to eat (smiles)	6
Vegetarian fare	7

Promoting comprehensive WSRC Wellness Program





# Safety

## SRS – World Class Performance

- **CY2006 – Best safety record in the history of WSRC**
- **WSRC team has worked 31 million hours without a lost workday case**
- **We are still not satisfied...**

**We are taking safety to the next level to realize the vision of an injury-free workplace**

