

INPO

Institute of Nuclear Power Operations

INPO Update:

2016 North American ISOE

ALARA Symposium

January 2016

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INPO Radiation Protection Manager

Update Topics

- Industry Performance Summary:
 - U.S. Industry Performance
 - 2015 AFIs
 - New Evaluation Process
- Revision to 05-008
- 2020 RP Indicator

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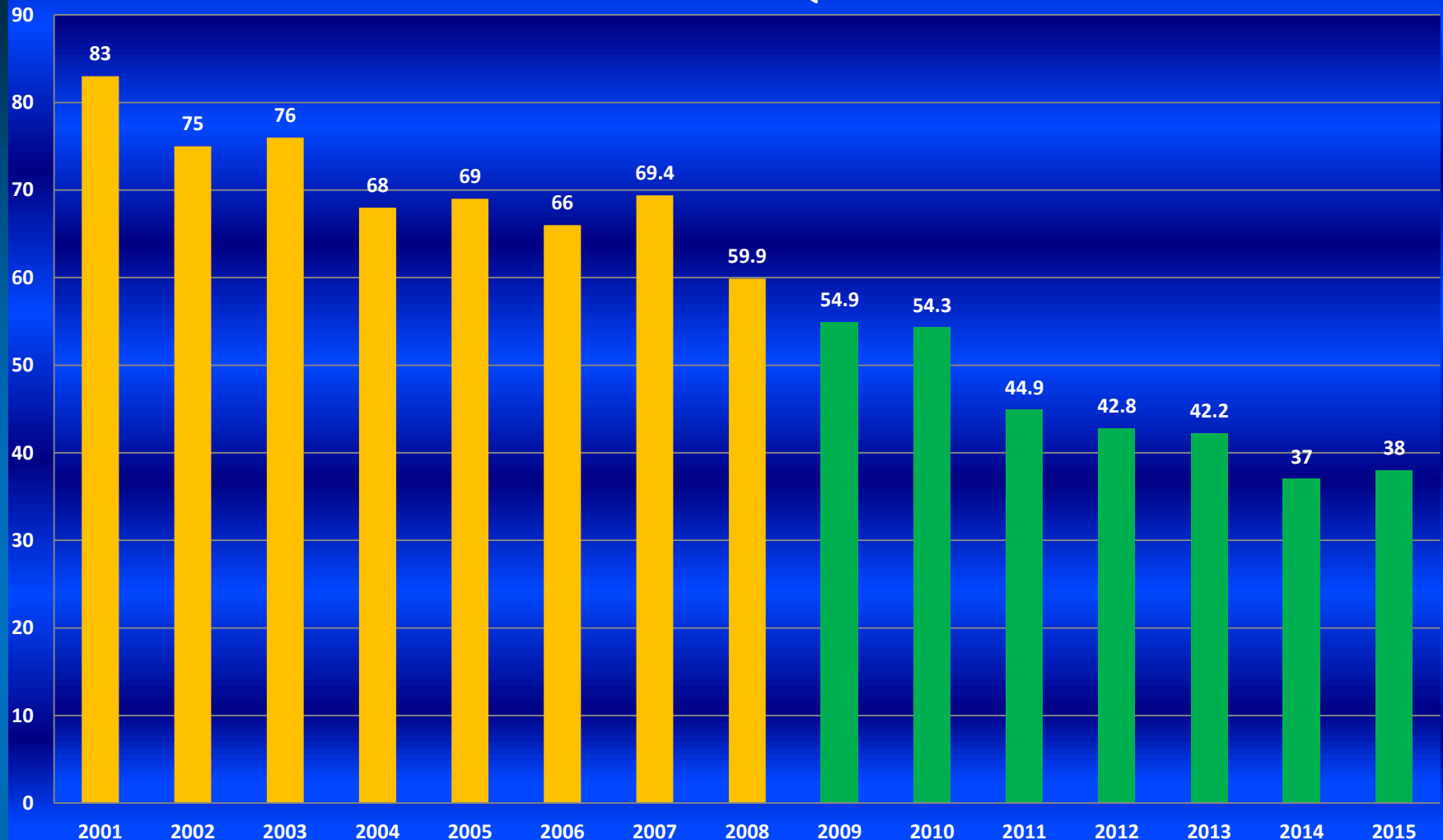


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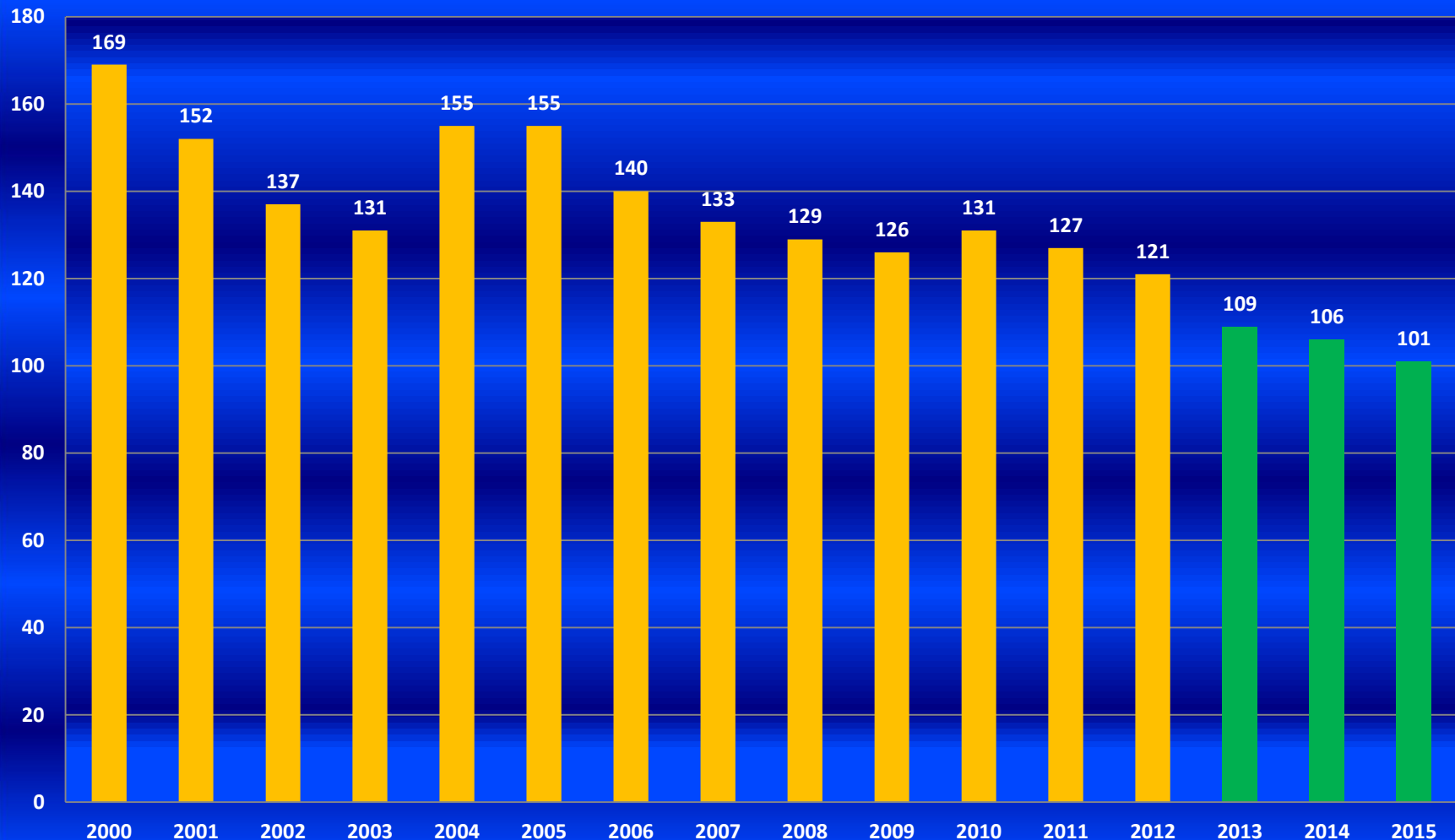
CRE Reduction

U.S. Collective Radiation Exposure (PWR)
Median Values – 3rd Quarter 2015

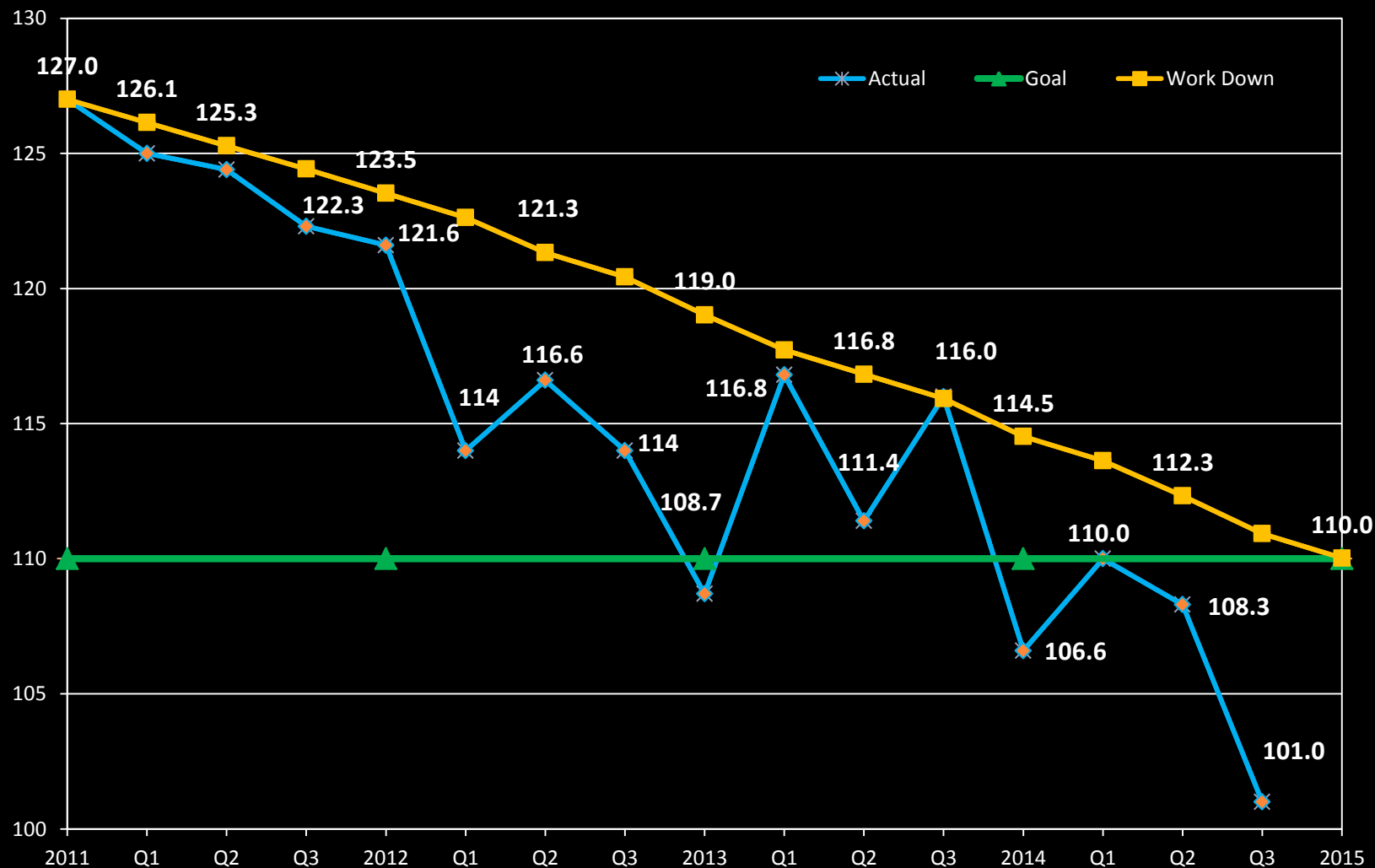


CRE Reduction

U.S. Collective Radiation Exposure (BWR)
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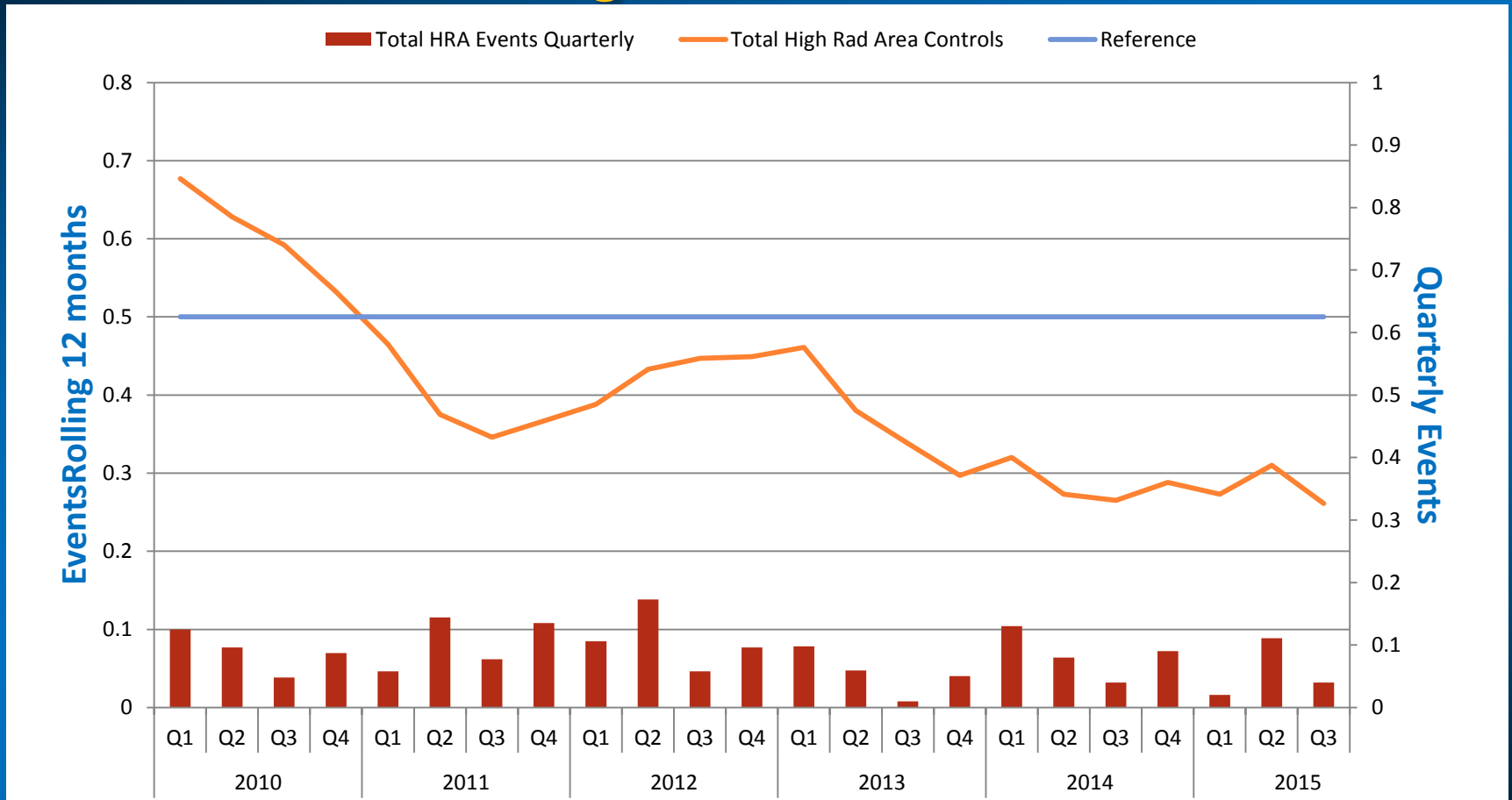


BWR Collective Radiation Exposure Median Person-Rem



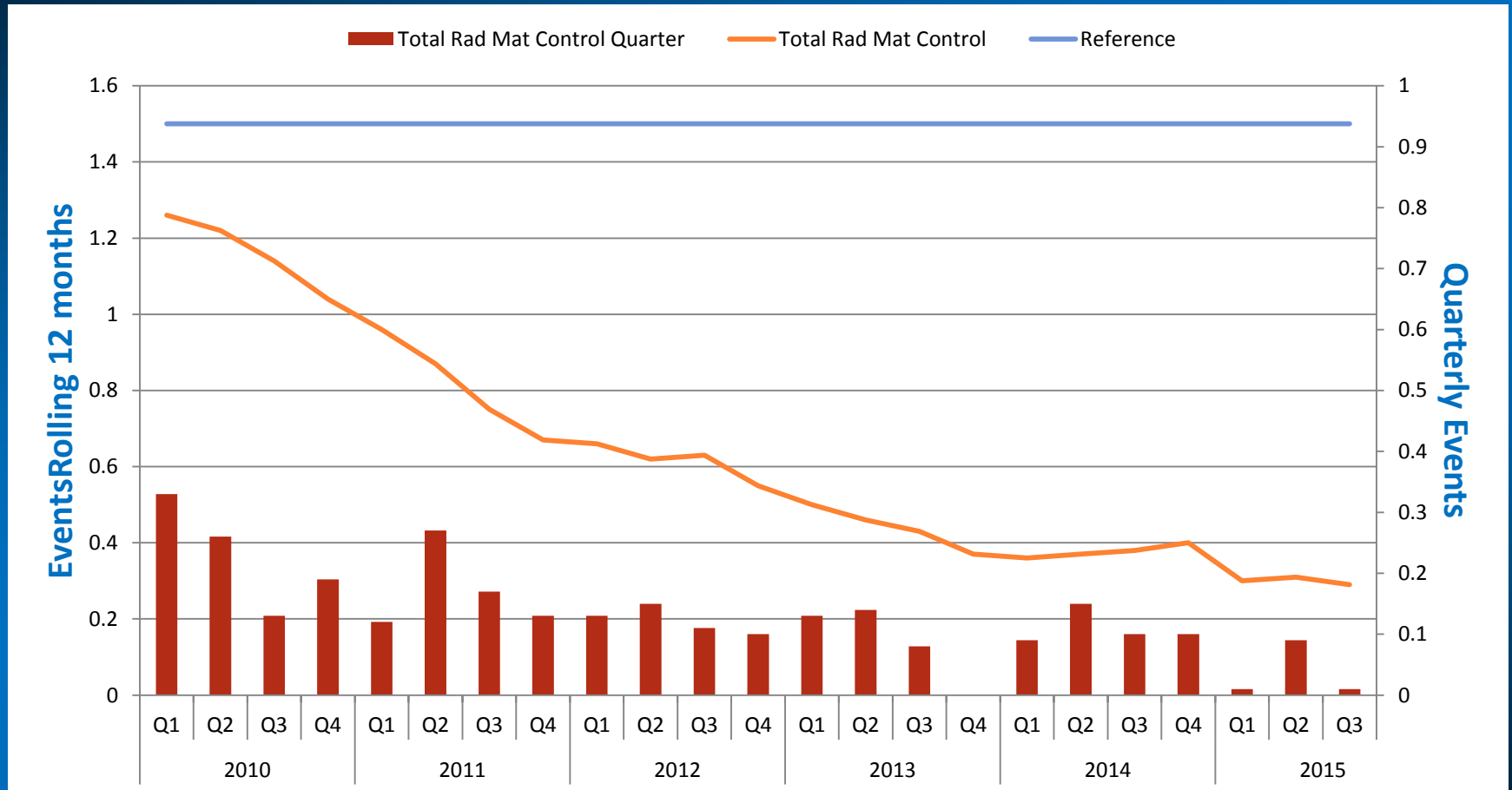
Industry Performance and Trends (PIC Data)

Total High Radiation Events



Industry Performance and Trends (PIC Data)

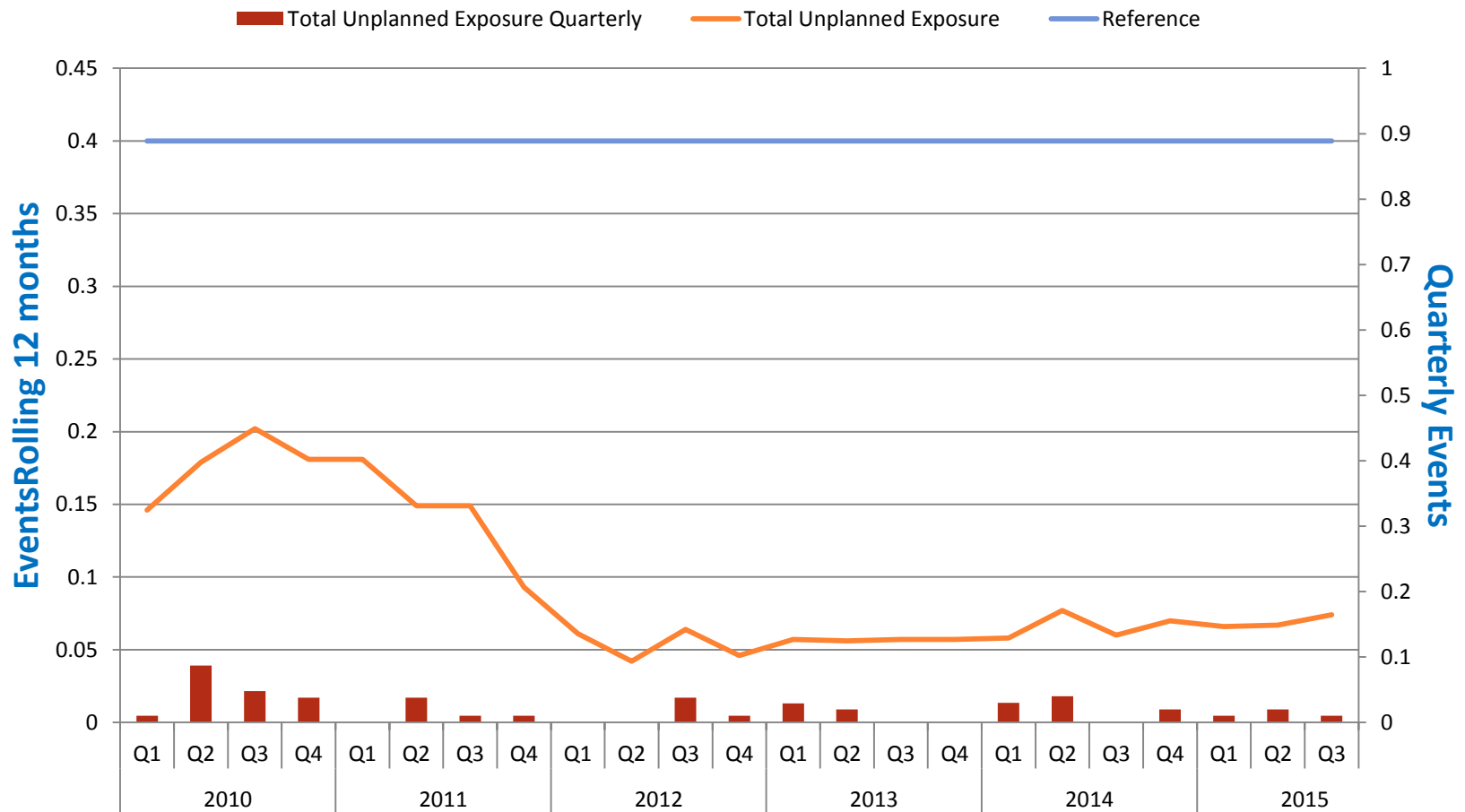
RAM Events



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Industry Performance and Trends (PIC Data)

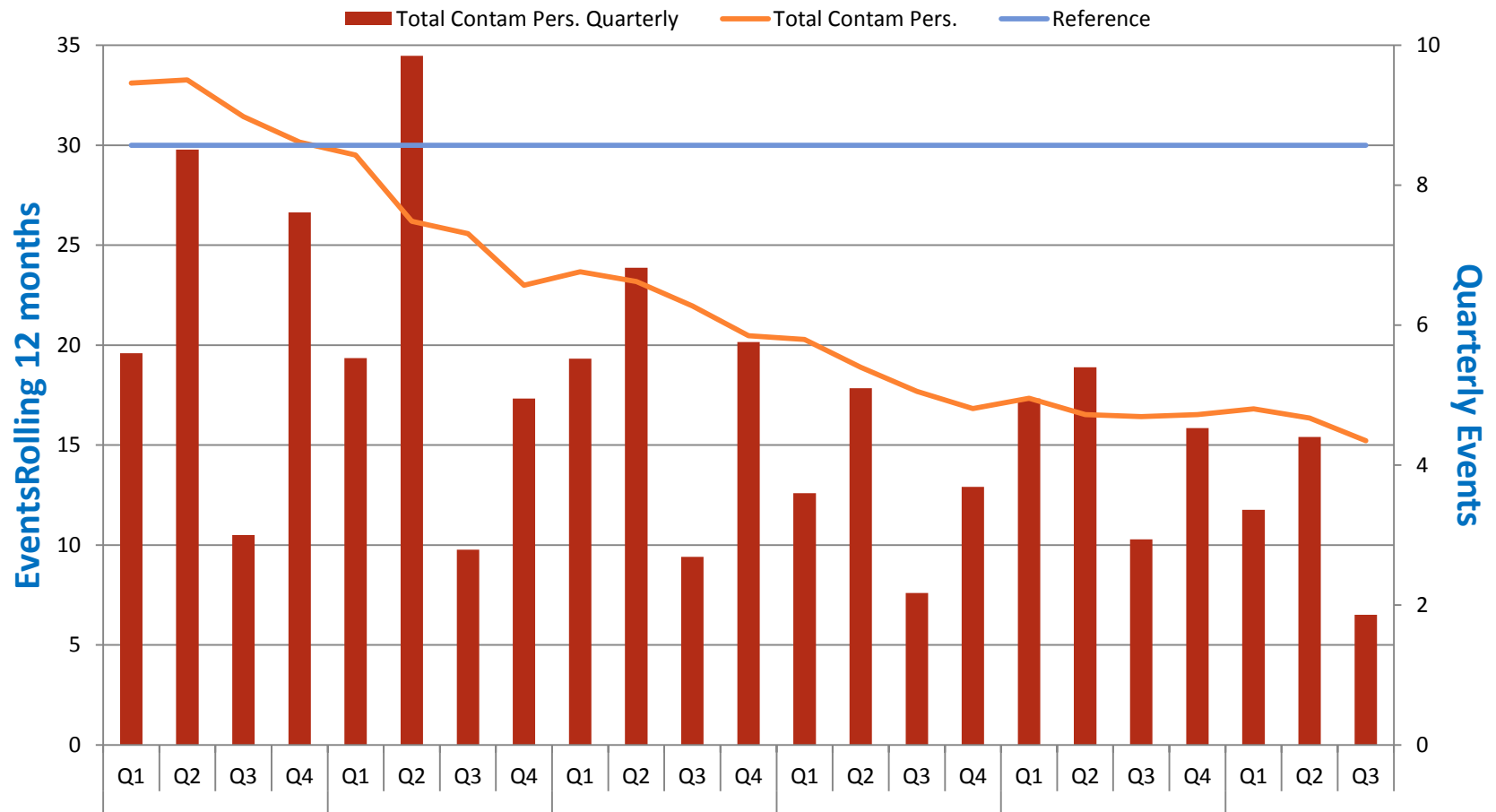
Unplanned Dose



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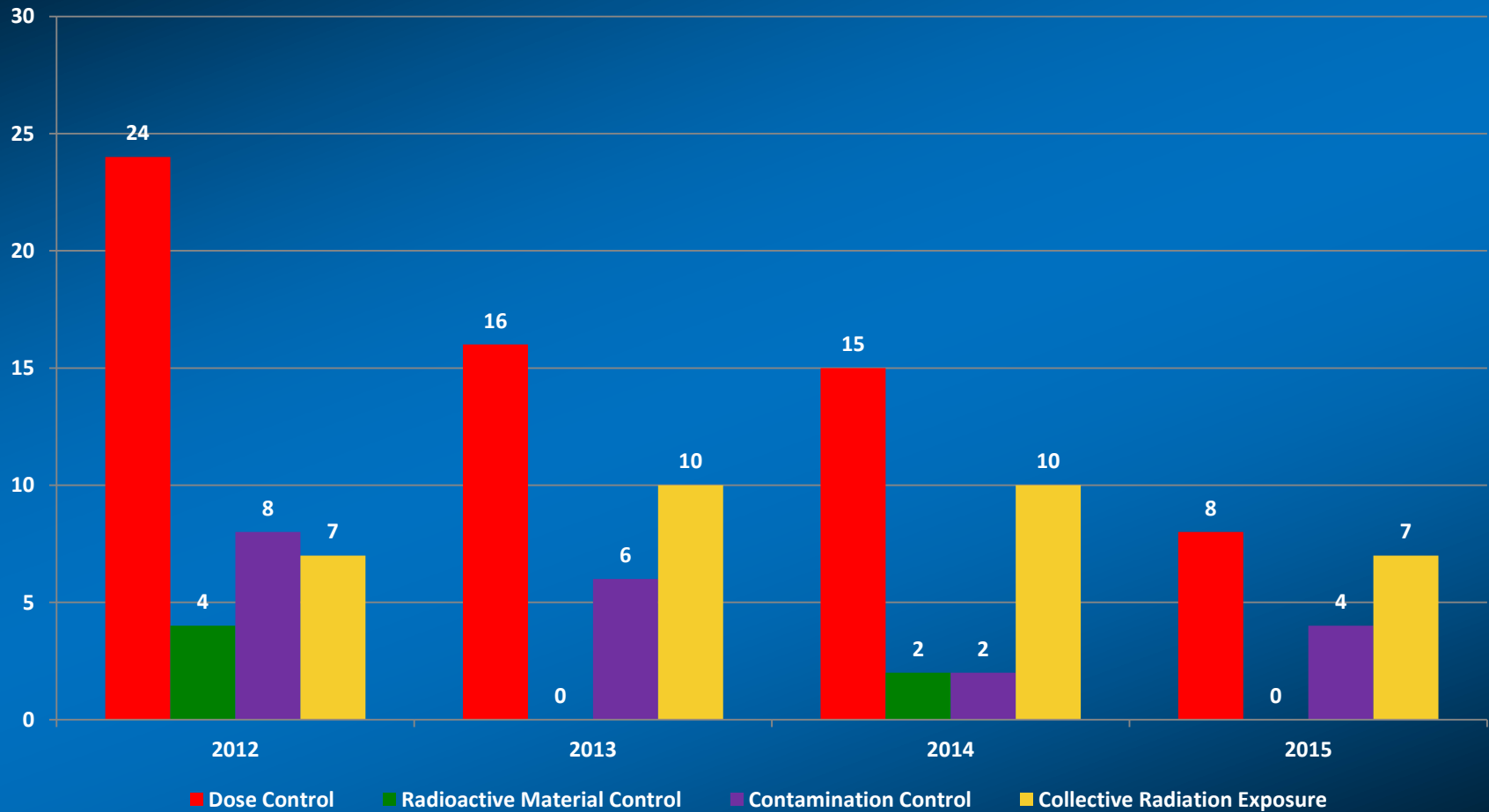
Industry Performance and Trends (PIC Data)

Personal Contamination Events



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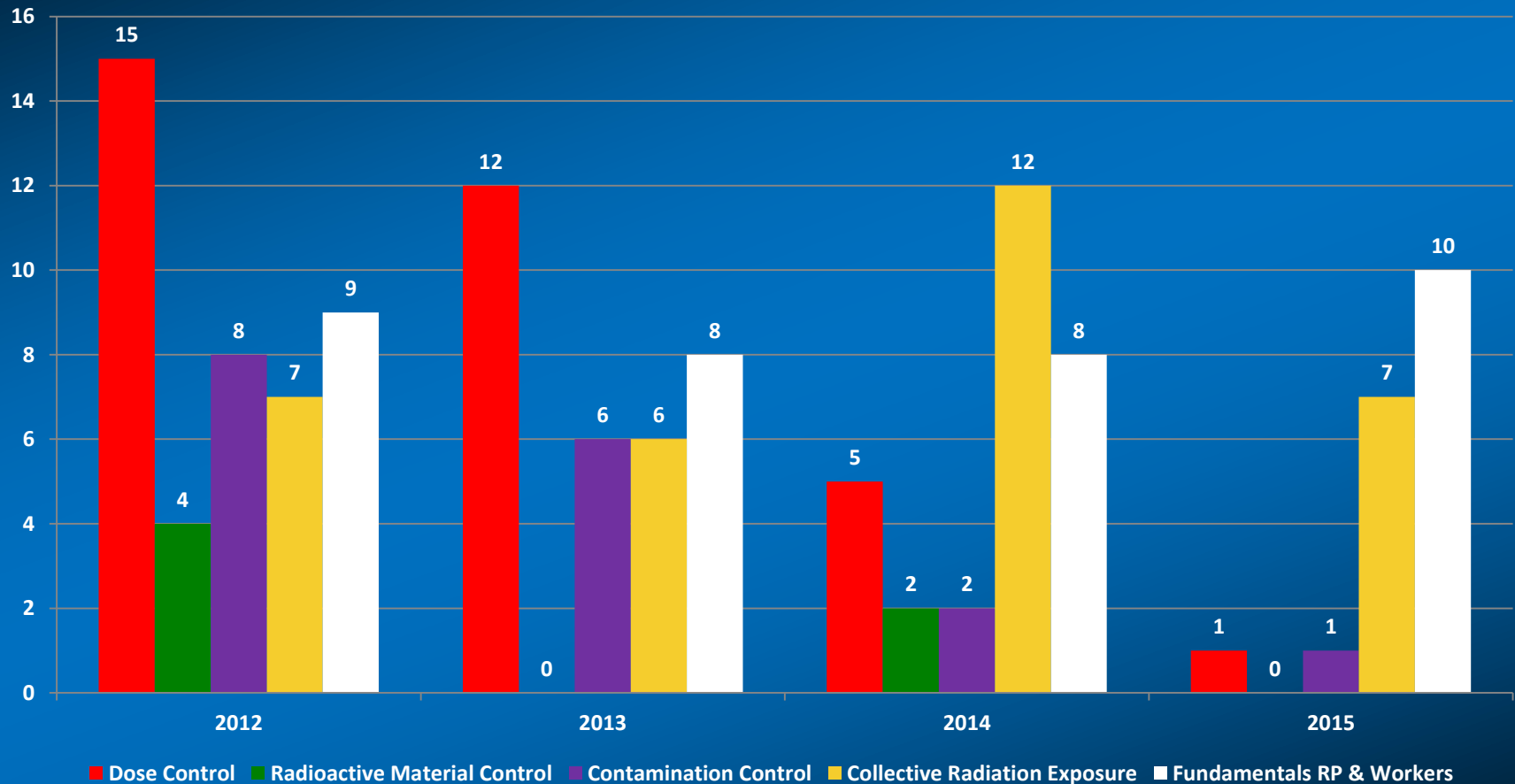
RP and RS AFIs Through 4th Qtr 2015



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RP and RS AFIs – New Slice

Through 4th Qtr 2015



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2015 AFIs: Themes / Underlying Causes

Collective Radiation Exposure (RP.1 & RS.1)

- Station leaders have not established effective source term and dose reduction strategies
- Station leaders have not effectively reduced source term levels.
- Refueling outage activities were not planned and executed to optimize dose reduction.

Consequences:

- Large overruns in outage CRE; dose goals not met

Causes:

- Managers did not appropriately monitor or challenge to incorporate scope and details in work and ALARA plans.
- Managers do not understand the cause of rising high source term and don't advocate reduction strategies.
- Managers have not incorporated previously identified actions into plans.



2015 AFIs: Themes / Underlying Causes

Fundamentals (RP.1, RS.1, AND NP.1)

- Radiation protection technicians are not correctly performing some fundamental practices – contamination and dose control standards, monitoring free-release of material, performing pre-work surveys.
- Radiation workers are not following fundamentals such as contamination control practices and unauthorized entries into HRAs.

Consequences:

- Spread of contamination, high radiation areas events, increased potential for unplanned dose

Causes:

- RP Supervisors and leads do not correct deviations or rationalize deviations because of perceived low risk or low consequence
- Radiation workers deviate because of perceived low risk or low consequence.
- Contributing, supervisors, including radiation protection supervision, are not correcting or coaching to the standard.



Revision: INPO 05-008, *Guidelines for Radiological Protection at Nuclear Power Stations*

Status

Issue First Quarter 2015

- Nuclear Promise Impact**



Revision: INPO 05-008, *Guidelines for Radiological Protection at Nuclear Power Stations.*

Highlights of the revision include:

- **Reduced the recommended number of performance indicators**
- **Eliminated recommendation to manage worker dose to less than 2 rem/year and maintaining supplemental workers to less than 500 mrem/outage**
- **Describe a graded approach for long-term dose reduction plans**
- **Eliminate 25 percent ALARA plan reviews**



Revision: INPO 05-008, *Guidelines for Radiological Protection at Nuclear Power Stations*

Highlights of the revision include:

- **Redefined guidance for establishing electronic dosimeter dose and dose rate setpoints**
- **Incorporated recommendations of IERs L2-11-41 and L2-11-1**
- **Updated use of EDEX for monitoring workers in non-uniform fields**
- **Clarified survey requirements for unconditional release of equipment and tools from the RCA**



Revision: INPO 05-008, *Guidelines for Radiological Protection at Nuclear Power Stations*

Highlights of the revision include:

- **Fixed instrument response checks - daily to weekly**
- **De-emphasis for level of response to Level 1 personal contamination events (PCEs)**

Considering – from Nuclear Promise Project

- **Self-briefing workers**
- **Self-monitoring workers**



Industry 2020 Radiation Protection Indicator

- Industry CNOs elected to maintain CRE as the **only** RP performance indicator to the INPO Index
- CRE will continue to comprise 10 points of the 100 point INPO Index
- PWRs and BWR CRE performance indicator will be determined using NEW calculation method:
 - Sum of CRE accrued during most recent refueling outage and CRE from most recent 24 months of non-refueling outage periods
 - Sum will be divided by 2 to approximate annualized values
- New method will ensure that dose from one (*and only one*) refuel outage is included in CRE indicator

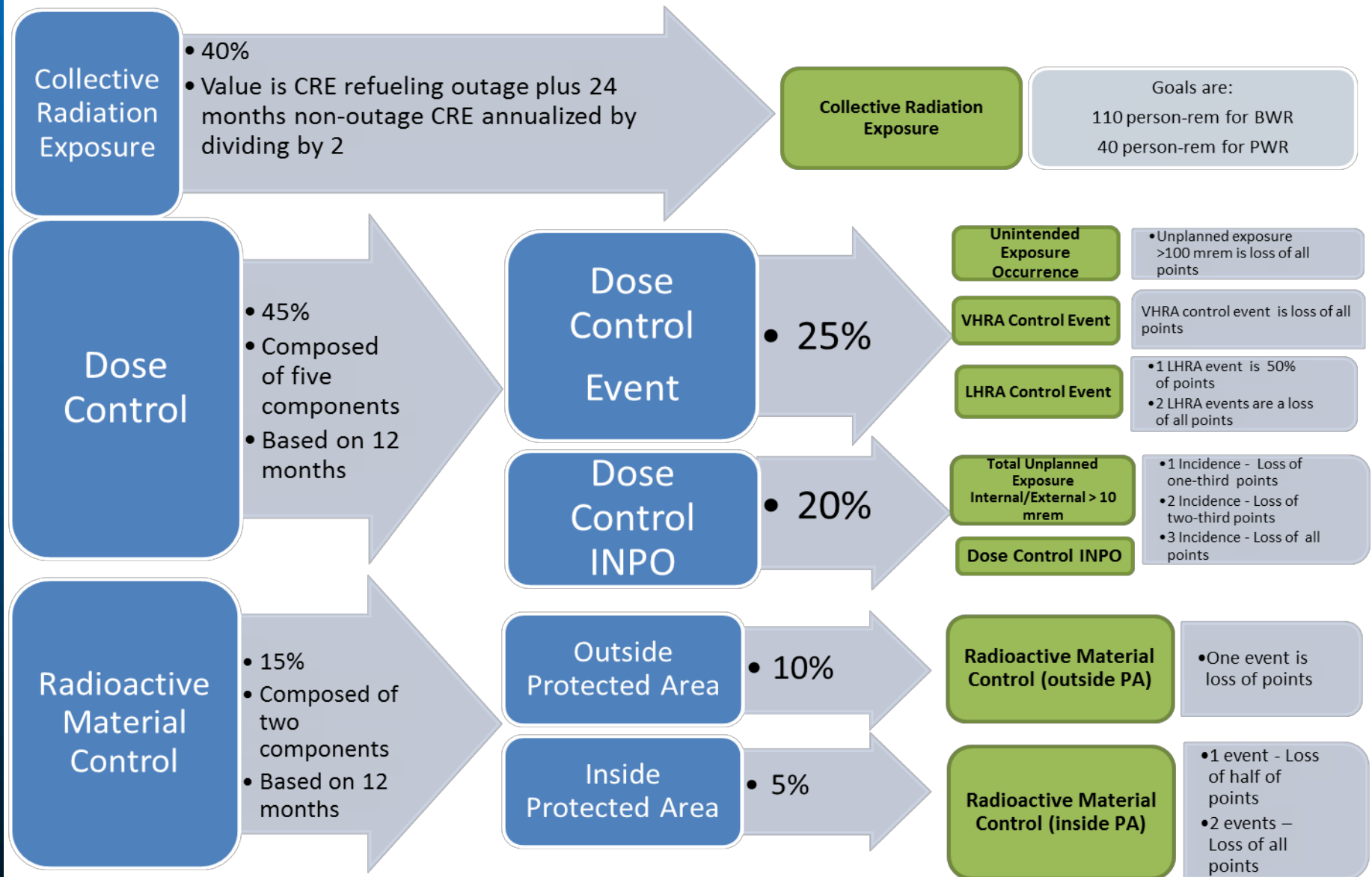


Industry 2020 Radiation Protection Goal *Continued*

- Industry CNOs approved the 2020 CRE goals
 - No change for BWRs – 110 person-rem
 - PWR median goal 40 person-rem
 - New calculation method (24 months vs 18 months) results in lower CRE values for same performance
 - Scale of point loss is 120-40 person-rem
- 2020 Goals become effective 1/1/2016
- Proposed CRE / HRA / RAM indicator will be used for performance monitoring (Tier II)



Illustration of Tier 2 Radiological Performance Indicator



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Questions & Comments