

UAE RAMP Morning Primer



March 26, 2018
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Office of Nuclear Regulatory Research
United States Nuclear Regulatory Commission



REIRS Database

- Began in **1969**, collecting:
 - Annual distribution of dose per licensee
 - Employment termination records of individual exposure
- In 1974, the systems were split between NRC REIRS and DOE REMS databases
- In 1989, REIRS database was migrated to Oracle
- In 1995, the NRC and DOE systems were brought back together and are separate Oracle databases on the same server at ORAU

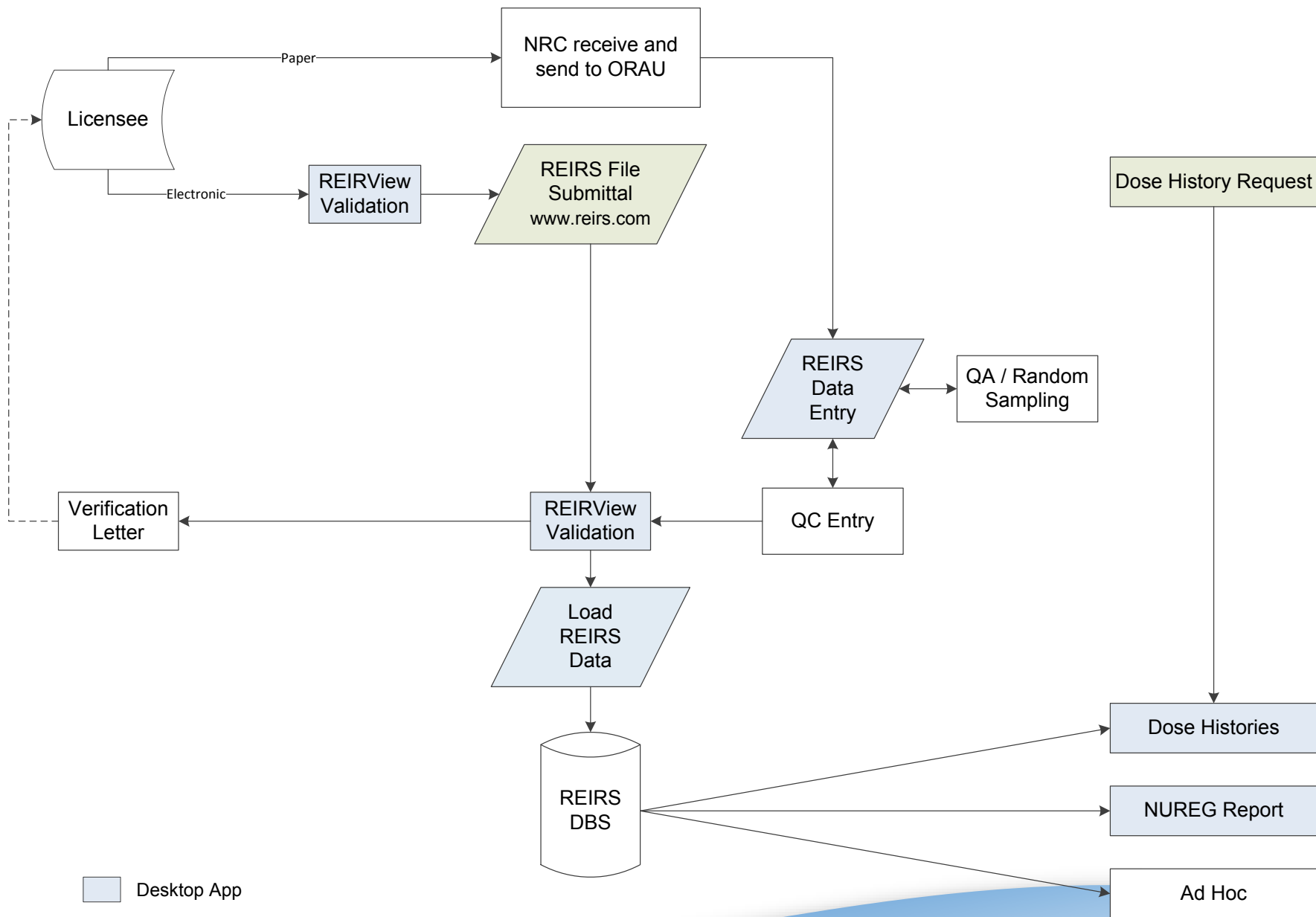
REIRS Database (cont.)

- Isolated from the Internet
- Multi-factor authentication on the ORAU network
- DOE Authority to Operate with all PII protections
- Annual and periodic cyber audits and scans
- Encryption at all levels



Individual Dose Records

- The dose records are identified by individual (PII)
- Termination records that were submitted under 10 CFR 20.408 from 1969 up to 1994. *Records go back to the 1940s.*
- Responses to the Generic Letter 94-04 that requested records that had not been reported prior to the revision of Part 20.
- Individual monitoring records under 10 CFR 20.2206 for all required NRC licensees from 1994 to the present.



← → <https://apps.ora.gov/CER/FileSubmission/Form> REIRS and REMS File Submi... x

REIRS and REMS File Submission Form ?

All fields are required.

Submitter Name:

Submitter Title:

Organization / Company:

NRC License Number or DOE Organization Code:

Phone Number: - - Ext.

Email Address:

File to Submit:
Upload Limit 15MB

Type Of Data:

- ☐ **ANNUAL - NRC:**
Individual monitoring records reported under [10 CFR 20.2206](#), and [Reg Guide 8.7](#), including corrected reports for prior years.
- ☐ **ANNUAL - DOE:**
Individual monitoring records reported under [10 CFR 835](#), and [REMS Reporting Guide](#), including corrected reports for prior years.
- ☐ **ANNUAL - Agreement State:**
Individual monitoring records, including corrected reports for prior years.

Exposure Data

- What type of licensee (NRC program code)
 - Vast majority are nuclear power plant
- Dates of monitoring (typically annual, but some shorter increments)
- External dose
 - Deep dose total (includes neutron)
 - Shallow dose whole body
 - Shallow dose to max extremity
- Internal dose
 - Requirements have changed over time
 - Old requirements had %MPBB or dose to organ
 - Since 1994 - has CEDE, CDE, intake μCi , radionuclide

Individual Information

- Full name
- ID number
- ID type (SSN, PPN, IDL, CSI, WPN, PAD, OTH)
 - **98.5%** of the individuals are identified by SSN
- Date of birth
 - **83.9%** of the individuals have date of birth, or at least the year of birth

REIRS Data Entry

The screenshot shows the REIRS Data Entry web application interface. The header includes the ORAU logo and the text "REIRS Data Entry Ver 2.03 Mar 29, 2016".

Batch/Header Detail

Lot/Batch Number Data Entry Date

Primary License

Licensee Name

Contact

Contact Phone

Enter Up to Ten Associate License(s)

Other_License_1

Other_License_2

Other_License_3

Other_License_4

Other_License_5

Other_License_6

Other_License_7

Other_License_8

Other_License_9

Buttons: Submit License Data, Submit License Change Request, Fetch Person Data

Output Option: ☒ RG8.7 Rev 3, ☐ Rev 2

Dose Detail

Employee ID ID Type

Last Name First Name MI

Gender Date of Birth

Monitoring Begin Monitoring End

Rpt Type Exp Type

License

Table:

NUCLIDE	CLASS	MODE	INTAKE	Del Rec
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

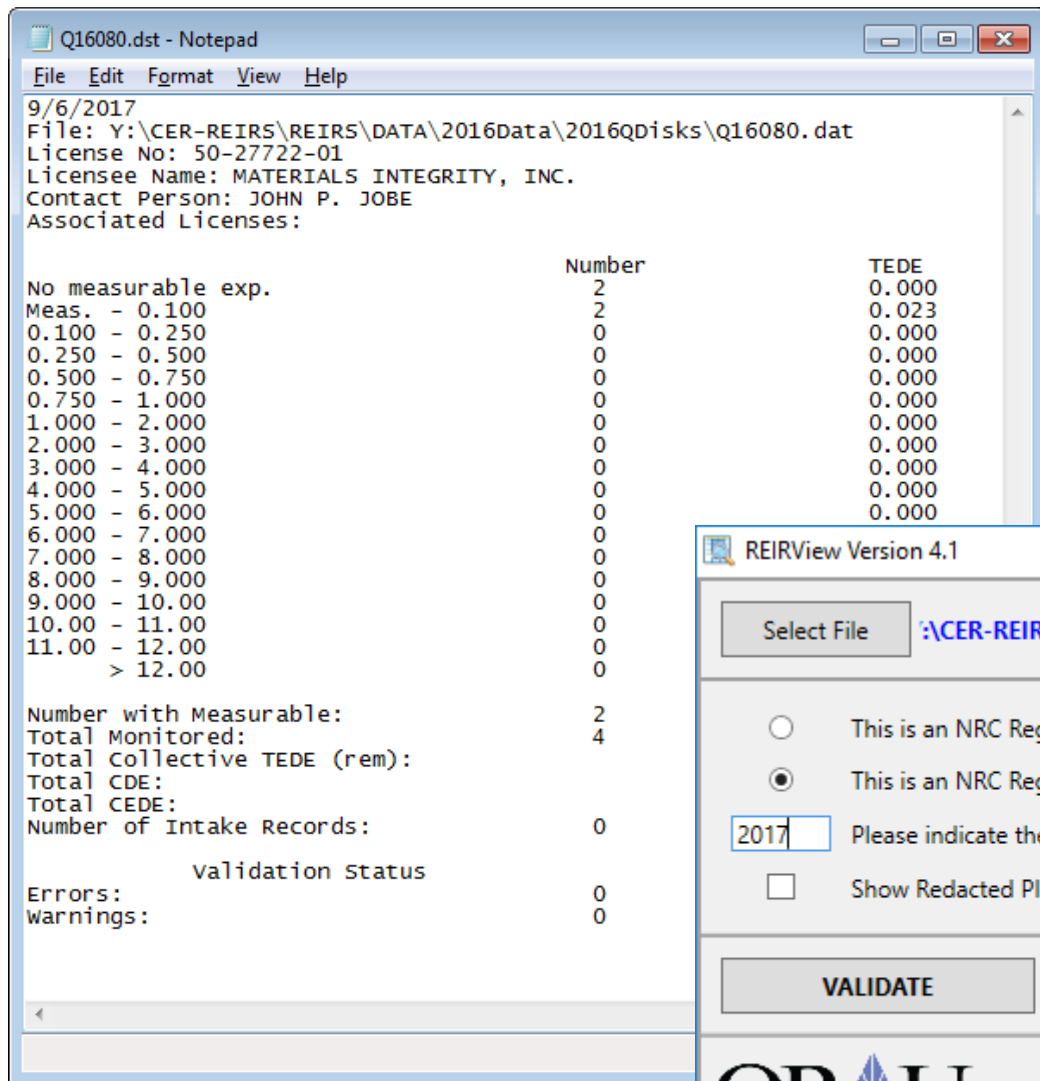
Table:

EDEX	<input type="text"/>
DDE	<input type="text"/>
LDE	<input type="text"/>
SDE_WB	<input type="text"/>
SDE_ME	<input type="text"/>
CEDE	<input type="text"/>
CDE	<input type="text"/>
TEDE	<input type="text"/>
TODE	<input type="text"/>

Intake Records: 1 of 1, No Filter, Search

Report Date:

- 87 REIRS batches were processed with a total of 3,180 individual records
- 90 Agreement State batches were processed for a total of 1,354 individual records



REIRView Version 4.1

Select File Y:\CER-REIRS\REIRS\DATA\2017data\2017EDisks\E17001.da About

☐ This is an NRC Regulatory Guide 8.7, Rev.2 file (does not contain EDEX)
☒ This is an NRC Regulatory Guide 8.7, Rev.3 file (contains EDEX)
 2017 Please indicate the monitoring year
☐ Show Redacted PII

VALIDATE VIEW RESULTS VIEW ERRORS

ORAU
Further. Together.

Visit the REIRView website:
<http://www.reirs.com/reirview.html>

Dose History

Automated Dose History Request Form

A dose history report for up to ten monitored individuals may be requested by completing and submitting the form below and submitting a signed release for each individual. Requesters must send a signed release form for each monitored individual in order to receive a dose history report. All fields are required to be completed except request comments. Upon approval of your request, a dose history report in PDF format will be e-mailed to you. The PDF file will be encrypted and password protected using the password you provide below.

If you are an organization requesting a dose history for individuals, use the [organization release form](#). If you are a member of the public, or you are requesting your own dose history, use the [individual release form](#).

If you need assistance with this form, click on [Help](#).

Requester

1) Requester Name

2) Title

3) Organization / Company

4) E-mail Address

5) Phone Number

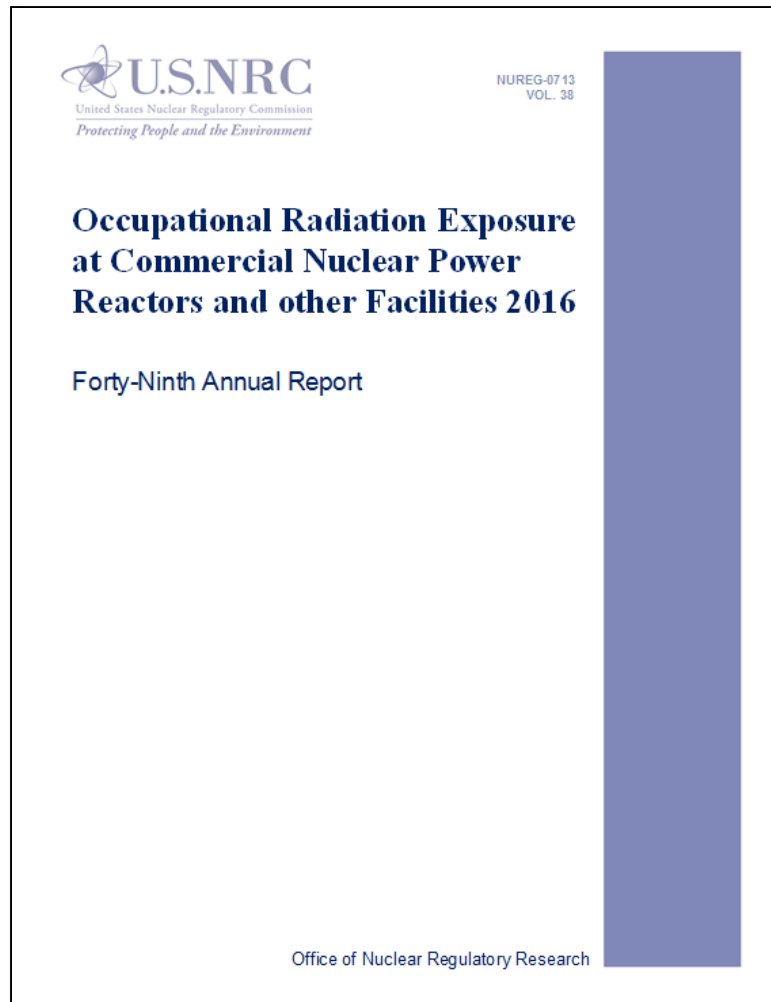
 - - Ext.

6) Comments

(optional)

- 2,068 dose history requests were processed in 2017. Includes FOIA.

Other NUREG-0713 Information



- Monthly Operating Report (MORP) data – INL generated
- Status of the Decommissioning Annual Report
- NRC Information Digest

	Plant Name	Three Year Coll. TEDE per Reactor Year 2014-2016 (person-rem)	Percent Change From 2013-2015	2013-2015 Quartile (if changed)
1st Quartile	CLINTON	49.573	-39% ▼	2
	FITZPATRICK	61.660	-6% ▼	-
	MONTICELLO	64.637	-47% ▼	3
	LIMERICK 1,2	64.997	-2% ▼	-
	DRESDEN 2,3	66.271	1% ▲	-
	RIVER BEND 1	71.924	-35% ▼	3
2nd Quartile	QUAD CITIES 1,2	78.150	-10% ▼	-
	DUANE ARNOLD	84.347	59% ▲	1
	HATCH 1,2	96.522	16% ▲	-
	PILGRIM	99.856	-31% ▼	3
	OYSTER CREEK	100.600	52% ▲	1
	SUSQUEHANNA 1,2	109.660	1% ▲	-
3rd Quartile	BRUNSWICK 1,2	109.952	-23% ▼	4
	NINE MILE POINT 1,2	113.481	6% ▲	2
	HOPE CREEK 1	115.429	-3% ▼	-
	COLUMBIA GENERATING	116.577	-36% ▼	4
	BROWNS FERRY 1,2,3	120.278	2% ▲	-
	GRAND GULF	133.914	66% ▲	1
4th Quartile	COOPER STATION	141.941	60% ▲	2
	FERMI 2	163.104	6% ▲	-
	PERRY	169.261	-40% ▼	-
	PEACH BOTTOM 2,3	171.460	-21% ▼	-
	LASALLE 1,2	201.196	-4% ▼	-
Average per Reactor-Year		110.501	-8% ▼	

Three-Year Collective TEDE per Reactor-Year for BWRs 2014-2016

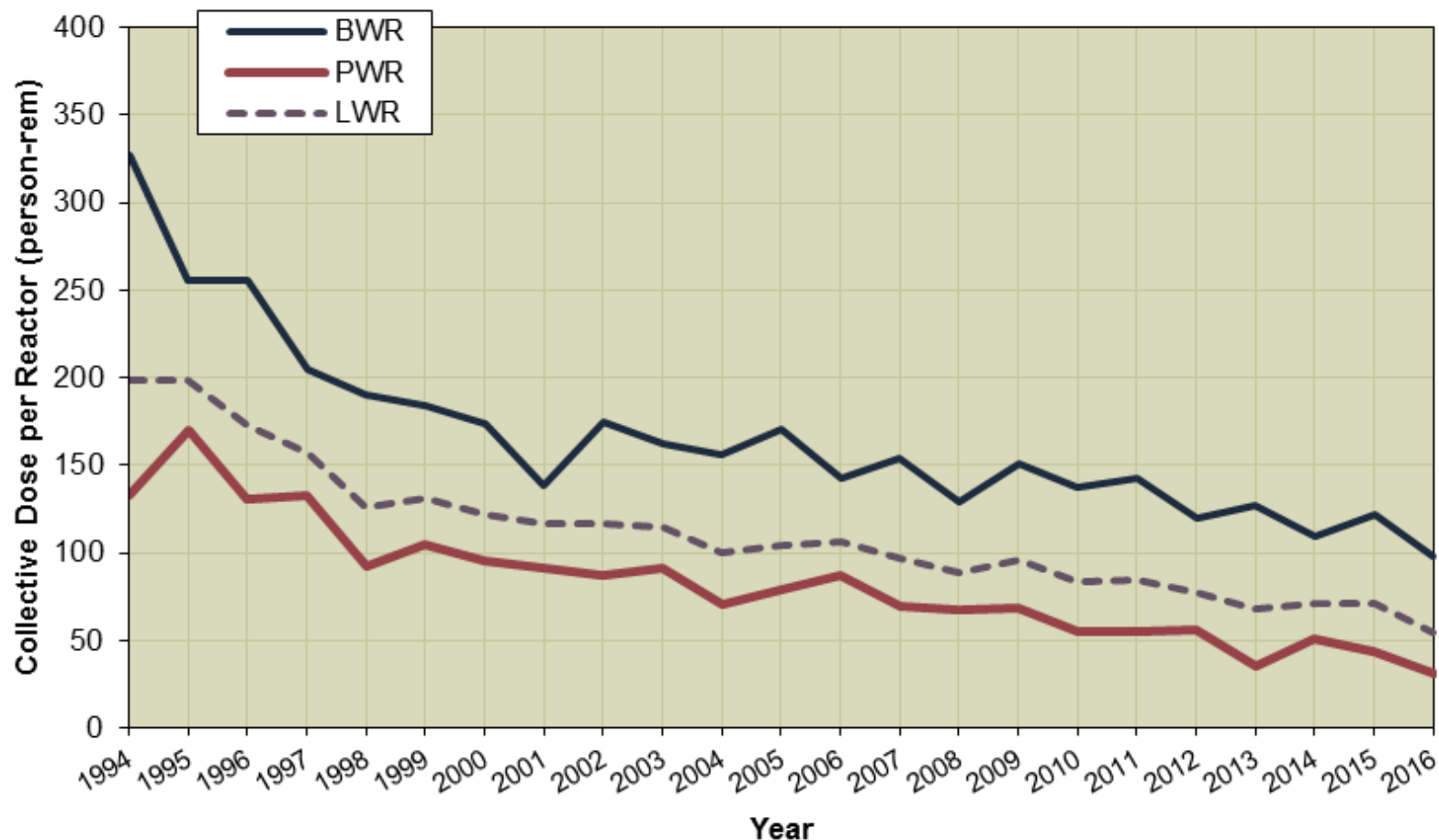
← Average 110.501

Three-Year Collective TEDE per Reactor-Year for PWRs 2014-2016

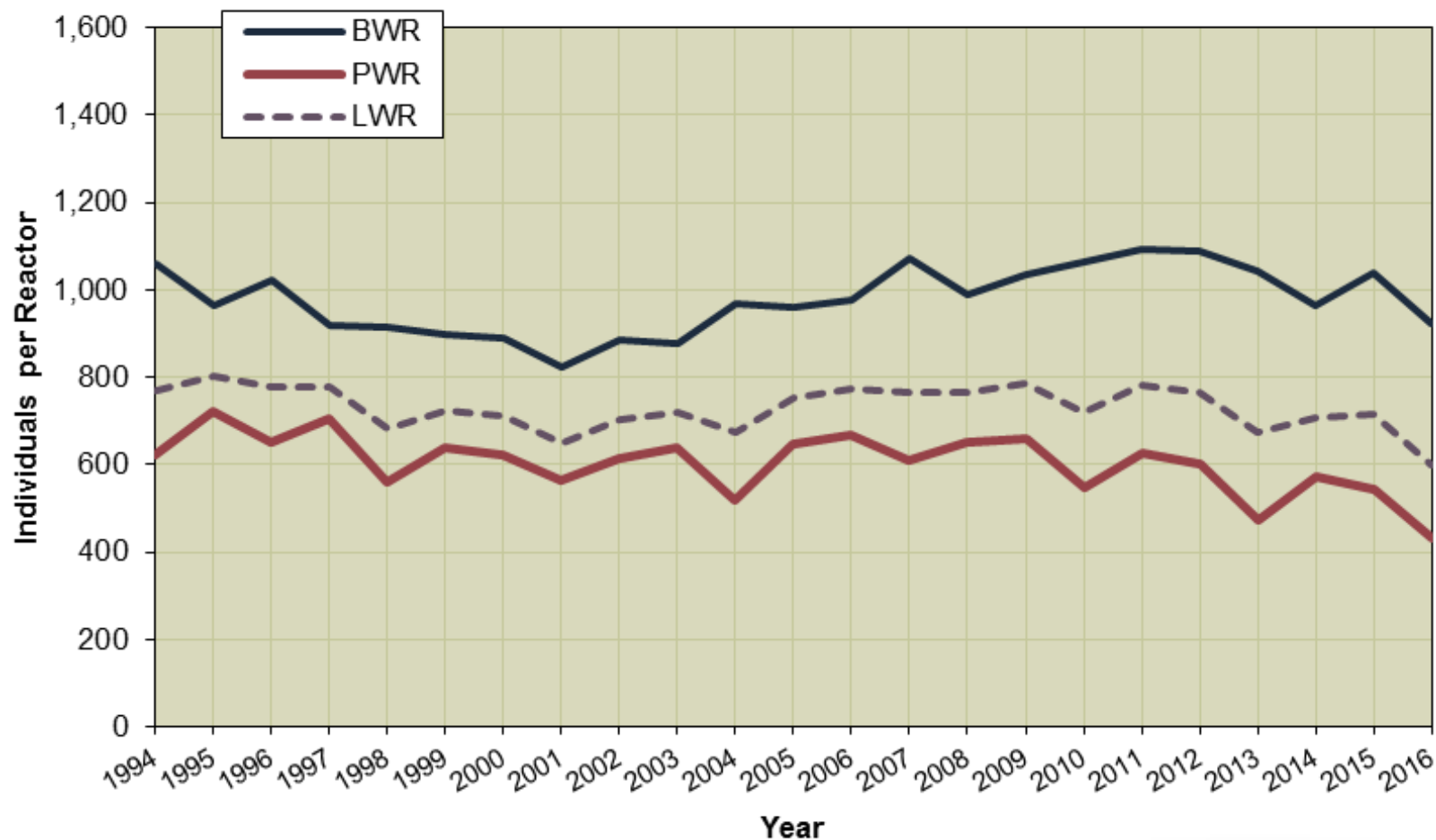
	Plant Name	Three-Year Coll. TEDE per Reactor Year 2014-2016 (person-rem)	Percent Change From 2013-2015	2013-2015 Quartile (if changed)
1st Quartile	PALO VERDE 1,2,3	20.310	-14% ▼	-
	BRAIDWOOD 1,2	22.443	6% ▲	-
	SOUTH TEXAS 1,2	25.234	-15% ▼	-
	FARLEY 1,2	25.581	5% ▲	-
	OCONEE 1,2,3	25.718	-19% ▼	2
	DIABLO CANYON 1,2	27.096	6% ▲	-
	GINNA	28.142	-2% ▼	-
	CALLAWAY 1	29.024	4% ▲	-
	COOK 1,2	29.557	-5% ▼	-
	ROBINSON 2	29.581	-46% ▼	4
2nd Quartile	BYRON 1,2	29.620	-2% ▼	1
	PRAIRIE ISLAND 1,2	30.230	-31% ▼	3
	FORT CALHOUN	30.765	-36% ▼	3
	CALVERT CLIFFS 1,2	32.263	15% ▲	1
	WATTS BAR 1	32.359	2% ▲	-
	BEAVER VALLEY 1,2	33.718	1% ▲	-
	HARRIS	34.381	-10% ▼	-
	COMANCHE PEAK 1,2	36.464	-4% ▼	-
	CATAWBA 1,2	37.592	-3% ▼	-
3rd Quartile	POINT BEACH 1,2	38.715	-2% ▼	2
	NORTH ANNA 1,2	39.182	-1% ▼	2
	SALEM 1,2	39.450	17% ▲	2
	MCGUIRE 1,2	42.552	-14% ▼	4
	TURKEY POINT 3,4	44.953	-2% ▼	-
	SEABROOK	45.903	-1% ▼	-
	INDIAN POINT 2,3	45.931	-1% ▼	-
	VOGTLE 1,2	45.964	-7% ▼	4
	WATERFORD 3	46.418	0%	-
4th Quartile	SURRY 1,2	47.484	-7% ▼	-
	MILLSTONE 2,3	48.095	0%	3
	ARKANSAS 1,2	53.232	24% ▲	3
	SEQUOYAH 1,2	53.360	24% ▲	3
	SUMMER 1	59.583	-1% ▼	-
	ST. LUCIE 1,2	64.301	0%	-
	WOLF CREEK 1	64.312	-10% ▼	-
	THREE MILE ISLAND 1	66.931	-35% ▼	-
	DAVIS-BESSE	106.644	57% ▲	-
	PALISADES	240.805	-1% ▼	-
Average per Reactor-Year		42.138	-3% ▼	

← Average 42.138

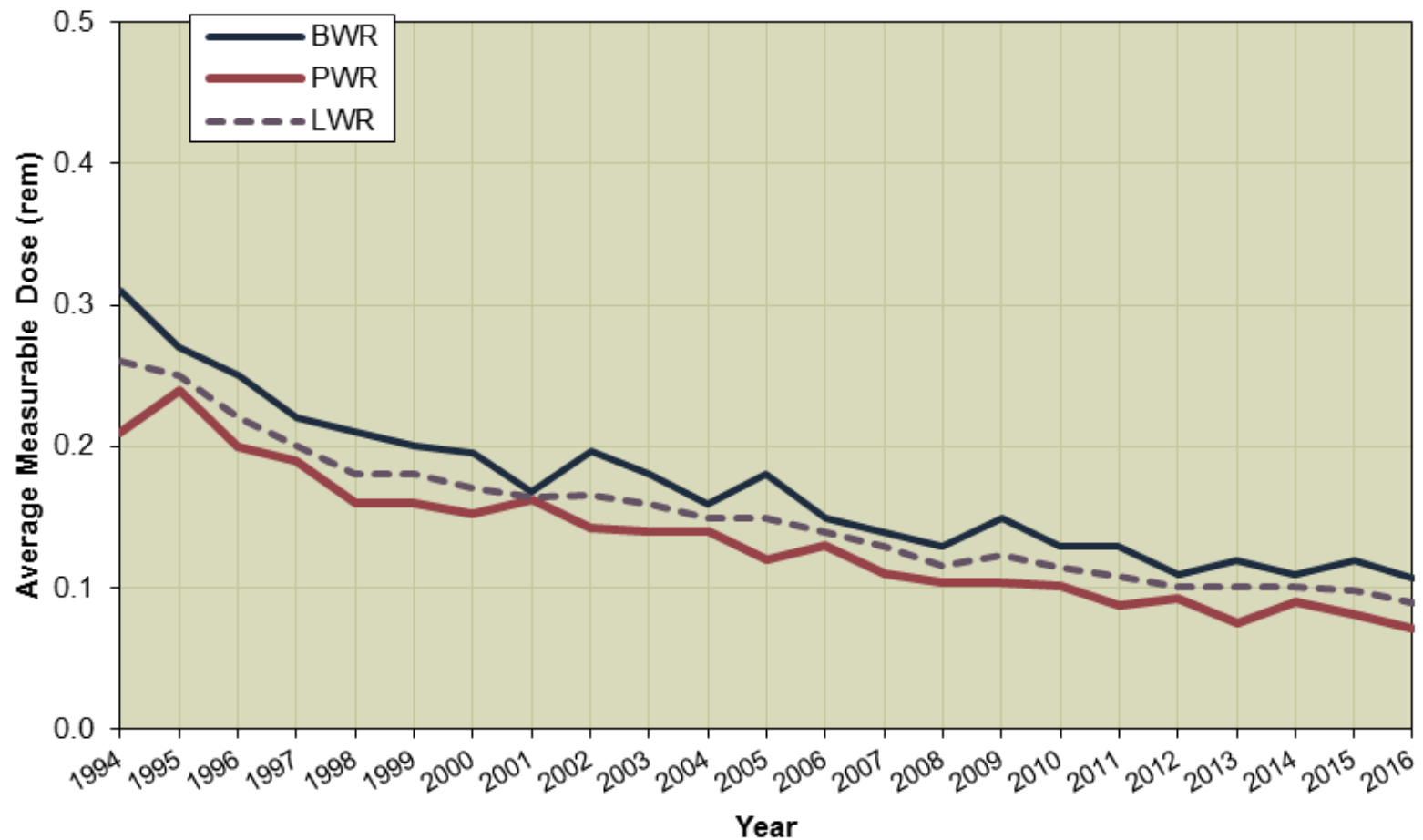
Average Collective Dose per Reactor



Average Number of Individuals with Measurable Dose per Reactor

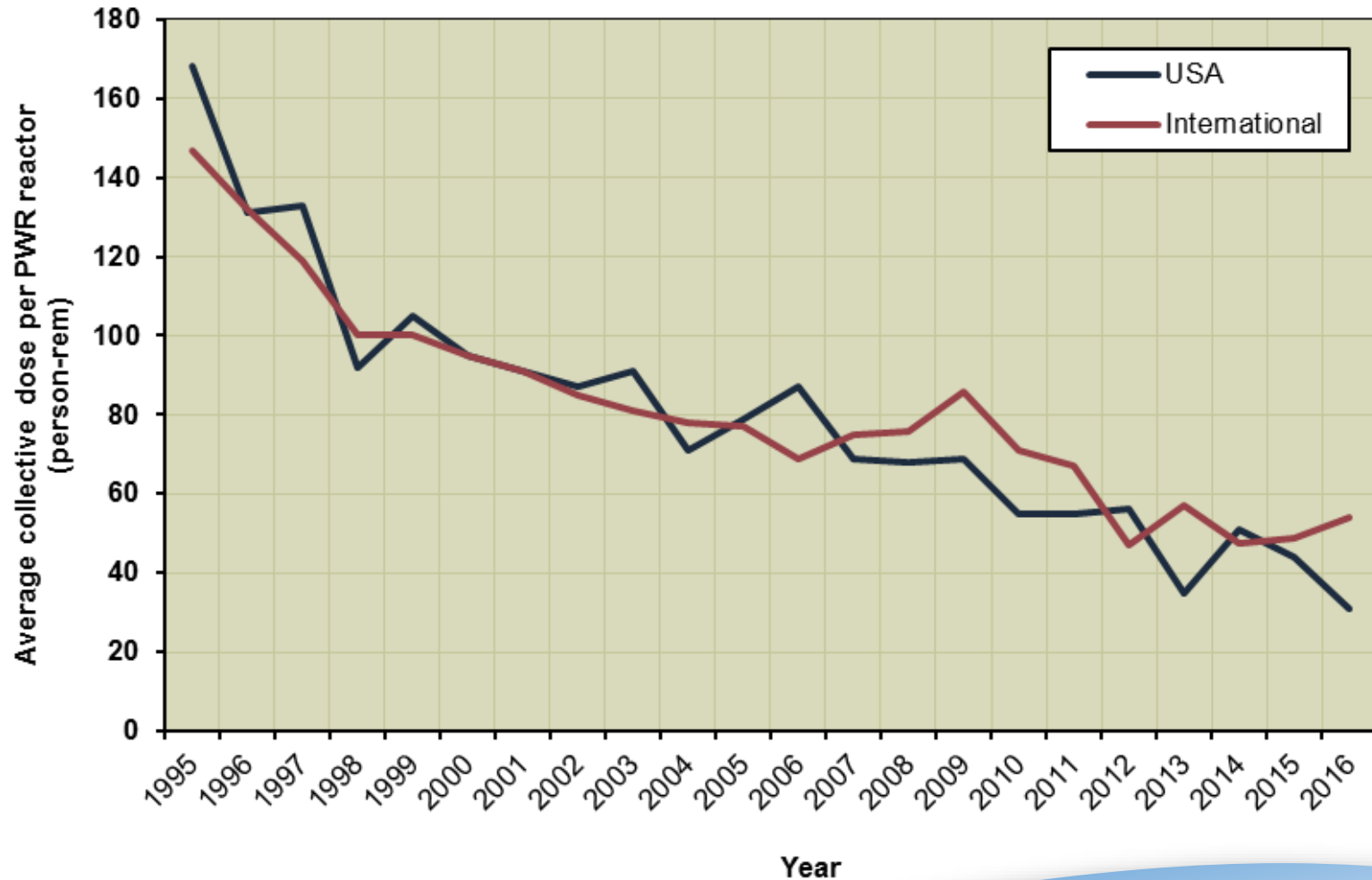


Average Measurable Dose per Individual

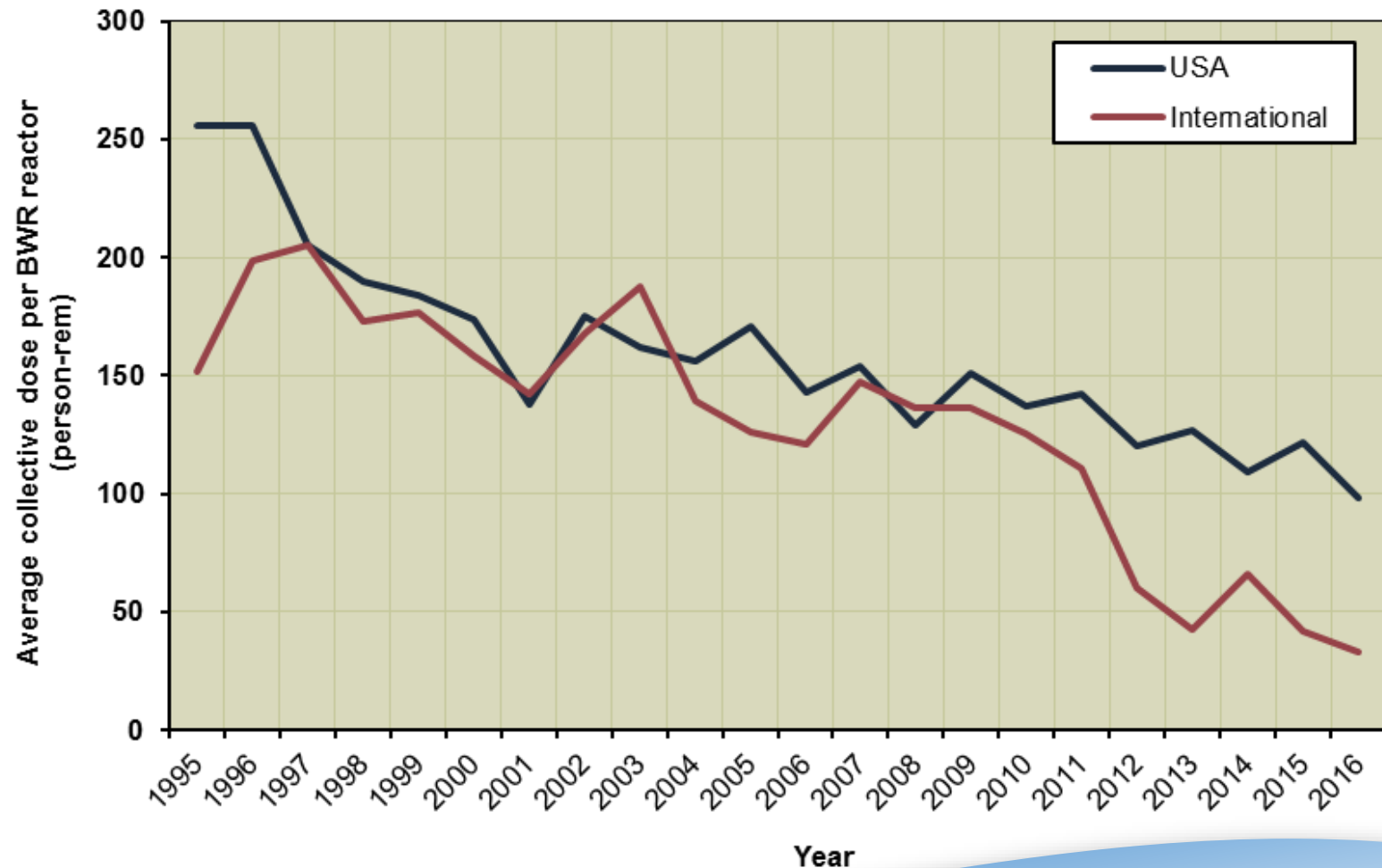


Not adjusted for transient workers.

Average collective dose per PWR reactor 1995 – 2016



Average collective dose per BWR reactor 1995 – 2016



Recent Ad Hoc uses

- Million Worker Study – largest epi study in terms of numbers ever attempted
- Exelon Data Request for records they reported
- UNSCEAR world-wide nuclear industry distribution
- NRC evaluation of dose limits for ICRP harmonization, particularly lens of the eye