

# Implementation of the Dose Reconstruction Rule 42 CFR Part 82

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# EEOICPA Requirements for Dose Reconstruction

Section 3623 (d):

*Establish by regulation methods for arriving at reasonable estimates of radiation doses received ... by each of the following employees:*



# EEOICPA Requirements for Dose Reconstruction (continued)

- (A) An employee who was not monitored for exposure to radiation at such facility.*
- (B) An employee who was monitored inadequately for exposure to radiation at such facility.*
- (C) An employee whose records of exposure to radiation at such facility are missing or incomplete.*

# Dose Reconstruction Process

Receive Claim

Request Data from DOE

Review Data

Conduct Interview



*CATI Report  
to Claimant*

Conduct Dose Reconstruction



*Draft Dose  
Reconstruction  
Report to Claimant*

Closeout Interview



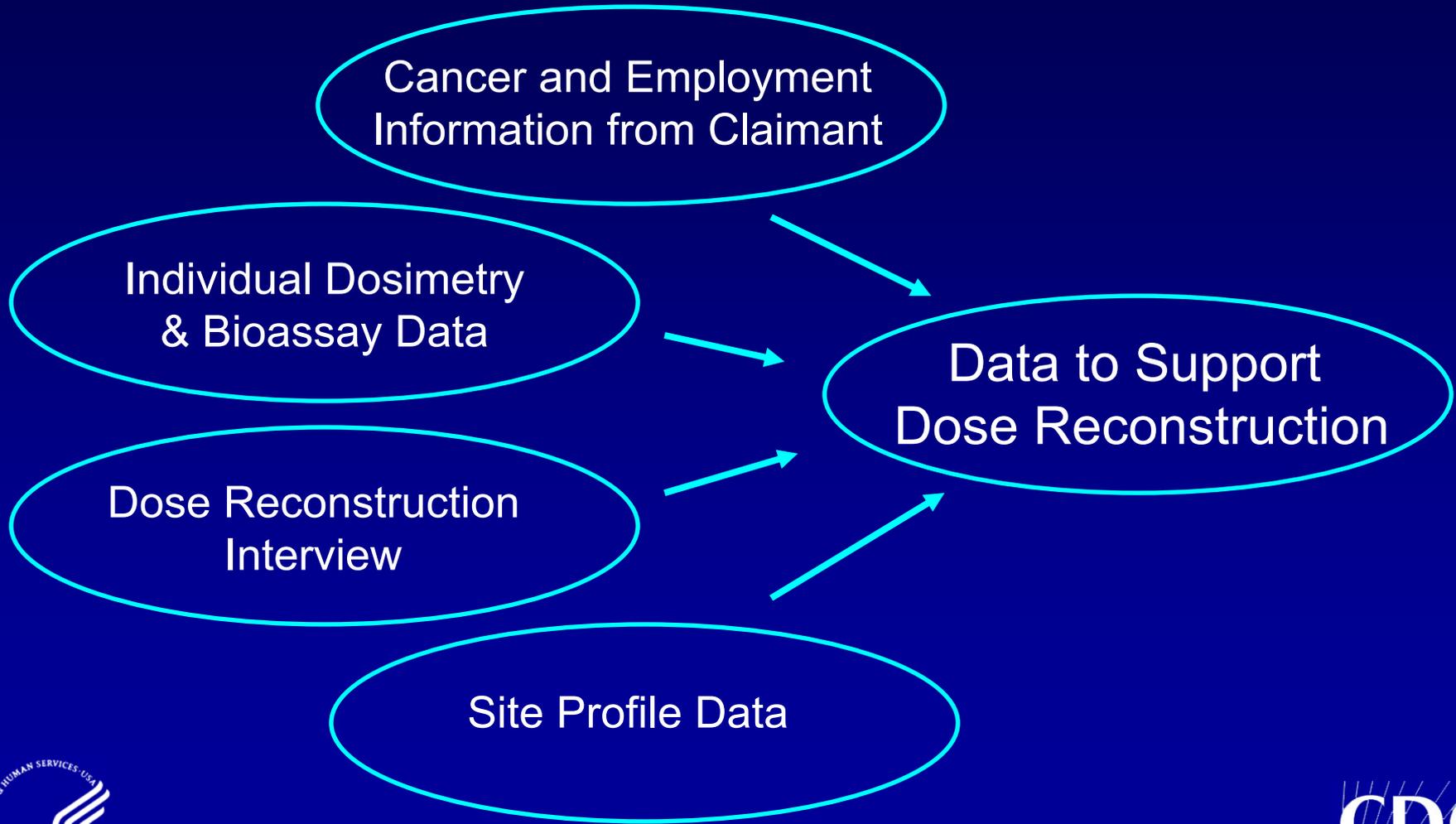
*Receive Signed  
OCAS-1*

Prepare Admin Rec.

Send to DOL



# Sources of Information



# Computer Assisted Telephone Interview (CATI)

- Uses standard scripts
  - Can be viewed on OCAS website
- Approved by the Office of Management and Budget
- Average interview ~ 1 hour
- Range from 20 minutes to >4 hours
- Provisions for secure “Q cleared” interviews
- Interview recommended, but not required

# Compensation vs. Regulatory Dose

- Compensation dose evaluation limited to period of covered employment
- Includes internal, external and some occupationally acquired medical sources of exposure
- Annual Dose required for PC estimate
- Committed Effective Dose Equivalent concept not applicable

# Compensation vs. Regulatory Dose (*cont.*)

- For external exposures, concept of deep dose equivalent not necessarily applicable
- Undetected dose is an important factor
- Uncertainty distributions can be used
- Can take advantage of recent scientific developments

# Technical Approach

- Evaluate all doses of record for data quality shortcomings
  - Assess capability of external dosimetry programs over time
  - Assess quality of radiochemical techniques for bioassay samples
- Evaluate potential for undetected dose
  - Missed dose for external exposure estimated by LOD/2
  - Minimum detectable internal dose based on bioassay program capability

# Technical Approach (cont.)

- Use recommendations established by national and international organizations
  - ICRP 66 Lung Model for inhalation exposures
  - More recent ICRP recycling models adopted for internal dose estimates
  - ICRP 74 used for external dose evaluation
- Preferentially use individual monitoring data if available and of sufficient quality
- As necessary, use area dosimeters, radiation surveys and air sampling data to augment individual monitoring data
- If no individual monitoring data, use available data on source term, etc.

# Examples of Information Types

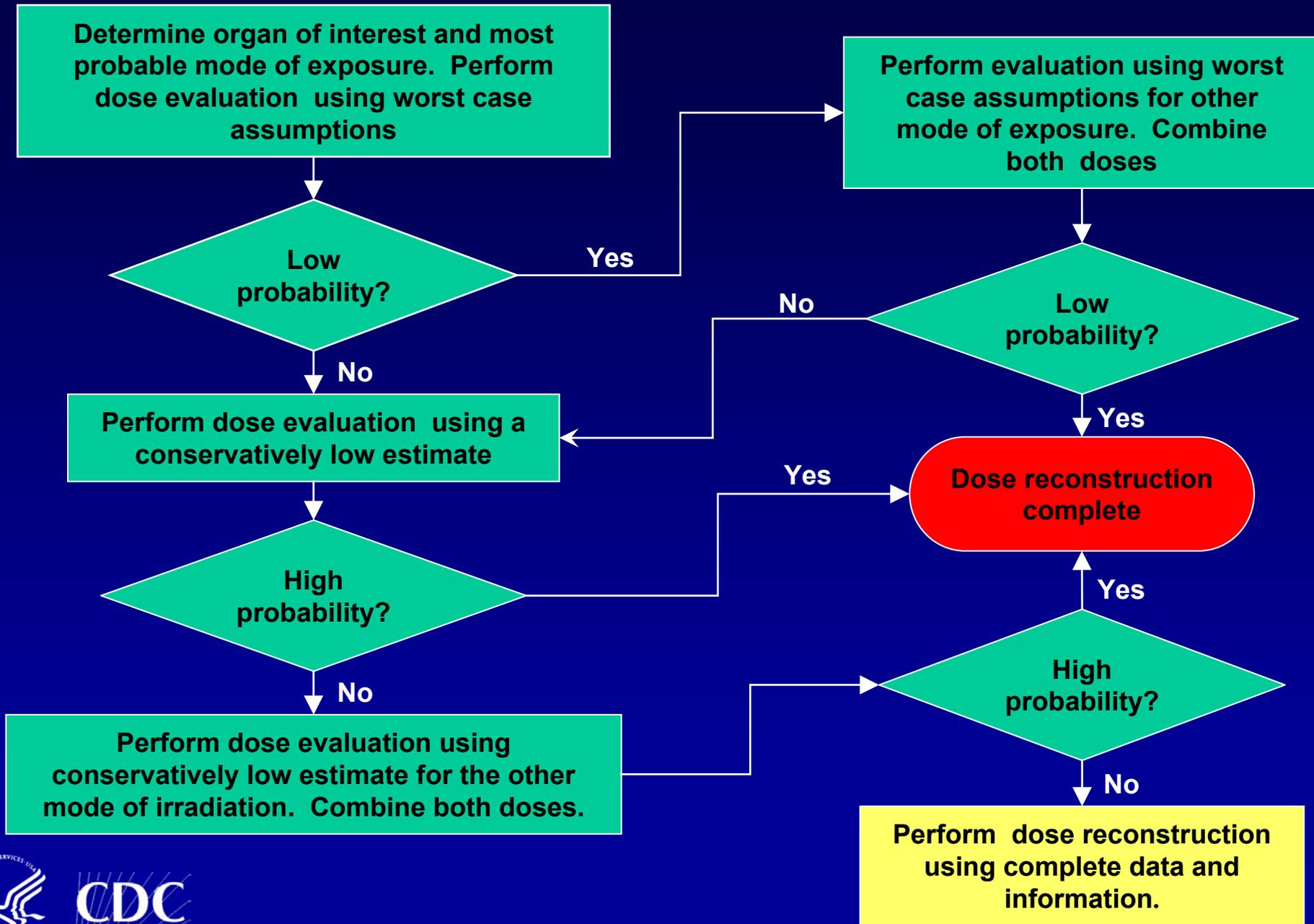
- Claimant interviews
- External dosimeter readings
- Pocket ionization chamber data
- Bioassay sample results
- *In Vivo* exam results
- Incident investigation reports
- Nasal smear results
- External contamination measurements
- Surface contamination surveys
- General area air samples
- Area radiation survey results
- Fixed location dosimeter results
- Breathing zone air sample results
- Source term characterization data
- General process descriptions



# Processing Strategy

- Start conservatively simple using available monitoring data
- Perform initial evaluation using worst case assumptions
- If case has a low estimated POC, dose reconstruction is complete
- If not, perform more detailed analysis

# Dose Reconstruction Flow Diagram



# Example IREP Input Spreadsheet

PERSONAL INFORMATION							
<u>Claimant Name</u>	<u>Claim #</u>	<u>Claimant SSN</u>	<u>DOL Claim Center</u>	<u>Gender</u>	<u>Birth Year</u>	<u>Year of Diagnosis</u>	<u>Cancer Model</u>
Janey J. Lowe	000002-DE	222-22-2222	Washington D.C.	Female	1955	1985	Lung
CLAIMANT CANCER DIAGNOSES							
	<u>Primary Cancer #1</u>	<u>Primary Cancer #2</u>	<u>Primary Cancer #3</u>	<u>Secondary Cancer #1</u>	<u>Secondary Cancer #2</u>	<u>Secondary Cancer #3</u>	
<u>Cancer Type</u>	Lung	N/A	N/A	N/A	N/A	N/A	
<u>Date of Daignosis</u>	1985	N/A	N/A	N/A	N/A	N/A	
EXPOSURE INFORMATION							
<u>Number of exposures</u>							
3							
<u>Exposure #</u>	<u>Exposure Year</u>	<u>Exposure Rate</u>	<u>Radiation Type</u>	<u>Dose Distribution Type</u>	<u>Parameter 1</u>	<u>Parameter 2</u>	<u>Parameter 3</u>
1	1965	chronic	electrons	Lognormal	4.000	2.000	0.000
2	1966	chronic	electrons	Lognormal	2.000	2.000	0.000
3	1967	acute	electrons (tritium)	Triangular	1.000	2.000	3.000
4	1970	chronic	electrons	Lognormal	2.000	2.000	0.000
5	1970	chronic	electrons	Lognormal	2.000	2.000	0.000
6	1970	chronic	electrons	Lognormal	2.000	2.000	0.000
7	1970	chronic	electrons	Lognormal	2.000	2.000	0.000
8	1970	chronic	electrons	Lognormal	2.000	2.000	0.000
9	1970	chronic	electrons	Lognormal	2.000	2.000	0.000
10	1970	chronic	electrons	Lognormal	2.000	2.000	0.000
11	1970	chronic	electrons	Lognormal	2.000	2.000	0.000

# Dose Reconstruction Report

- Cover Page
- Introduction
- Dose Reconstruction Overview
- Information Used
- Personal Background Information
- Dose Estimate
- Summary
- References
- IREP Input as an Attachment



# Additional Information

- Contact the NIOSH Office of Compensation Analysis and Support (OCAS) at 800-356-4674 or 513-841-4498
- Visit our website at:  
[www.cdc.gov/niosh/ocas](http://www.cdc.gov/niosh/ocas)
- E-mail us at [ocas@cdc.gov](mailto:ocas@cdc.gov)

