

**M e m o r a n d u m**

Date: August 16, 2000

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Subject: Results of Radiologic Health Branch's Best Practices Study

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The Radiologic Health Branch (RHB) conducted a Best Practices Study last year as part of the Business Process Reengineering Project. The attached report summarizes the results of this effort and transmits the detailed responses provided by each Radiation Control Program (RCP) that participated in the survey.

RHB initiated this study to identify proven and effective business processes and/or technologies that may be replicated or modified to meet the Branch's unique needs. Rather than re-inventing the wheel, RHB surveyed other RCPs and similar California State agencies to obtain ideas on how to solve business problems or optimize existing operations. The information captured via the study provided the Branch with useful comparative data and several "best practices" to incorporate into its conceptual business model.

Of the 17 RCPs selected to participate, 15 programs responded with detailed information. The Nuclear Regulatory Commission also provided timely and useful data.

To prepare the report, the Branch summarized and in some cases interpreted survey responses. RHB takes sole responsibility for any factual or statistical errors.

If you have any comments or questions, please feel free to contact Debbie Pellegrini at (916) 322-6274 or ([dpellegr@dhs.ca.gov](mailto:dpellegr@dhs.ca.gov)).

Attachment

DSP-006 Template  
Risk Distribution: SPO3

# State of California

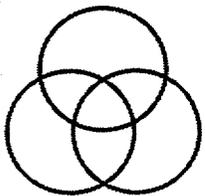
Department of Health Services

Radiologic Health Branch

**RHB BPR Project**

Best Practice Summary

(Final Submission)



Synergy Consulting, Inc.

December 17, 1999

## 1.0 INTRODUCTION

The Radiologic Health Branch (RHB) within the California Department of Health Services controls health radiation functions with the overall objective of providing safeguards essential to the protection of workers and the public from unnecessary exposure from radiation producing machines and radioactive materials. The objectives are met through radiography certification, X-ray machine registration, radioactive materials licensing, facility inspection, and enforcement actions. These activities help ensure compliance with public and occupational health and safety, and environmental protection laws and regulations applicable to the use of ionizing radiation.

In February 1999, the Branch contracted with Synergy Consulting, Inc. to conduct a Business Process Reengineering (BPR) Study to identify core process improvements to merge with new technologies. Synergy and the RHB BPR team completed an as-is assessment of the Branch's current business processes, resulting in as-is process maps and notes, and a listing of process problems. The team, using the results of the as-is assessment, then developed a conceptual design for RHB's primary processes.

To supplement the conceptual design, the team conducted a best practice study of other state radiologic control programs (RCPs). Organizations like RHB conduct these studies to identify proven and effective business processes and/or technologies that may be replicated or modified to meet their unique business needs. Through best practice findings, RHB might find policy, procedural, or resource improvements that could solve existing problems and/or benefit operations within the Branch. The results of the study also enable RHB to see where it stands with respect to other state programs.

Given this, a best practice study serves two main roles in conceptual design. First, the results of a best practice study *serve as an input* to conceptual design. Rather than re-inventing the wheel, RHB may obtain good ideas from other RCPs on how to solve some of its problems or optimize its operations. Secondly, the results of a best practice study may *validate the direction* chosen in the conceptual design. For example, the fact that several RCPs use the Internet to provide information and forms that may be downloaded and printed confirms RHB's intent to do the same.

This report presents preliminary best practice opportunities identified during the best practice study. It is divided into the following sections:

- Approach
- Preliminary best practice opportunities
- Additional survey results

## 2.0 APPROACH

A best practice study often comprises the following:

- **Competitive benchmark:** In the private sector, this entails looking at an organization's direct competitors to help position that organization in the marketplace. In RHB's case, since it has no competitors *per se*, the team surveyed other RCPs.
- **Functional benchmark:** Organizations may review business practices in organizations that conduct similar activities. The BPR team, in turn, conducted interviews with two California State organizations that conduct similar regulatory licensing and inspection activities.

Due to time and budget constraints, the best practice study focused primarily on the competitive benchmark study.

The team determined that the best approach to capture information would be through surveys with the RCPs and face-to-face interviews with the licensing and inspection organizations. Given this, the study included the following activities:

- Create selection criteria and identify best practice participants
- Develop survey/interview instrument
- Distribute survey and compile findings

Each activity is briefly described below.

## 2.1 Create Selection Criteria and Identify Best Practice Participants

The team first brainstormed on potential state RCPs to survey and California State organizations to interview. They then developed selection criteria to narrow participants to a more manageable number. Selection criteria included:

- Program size and scope—Budget and staff are comparable to that of RHB
- Internet use—RCPs have websites that offer general information and, in some cases, applications that may be downloaded
- Reputation—States are generally acknowledged by the RCP community as having good programs

Based on these criteria, the BPR team surveyed the following states:

- Alaska
- Arkansas
- Illinois
- Louisiana
- New Jersey
- North Carolina
- Oregon
- South Carolina
- Texas
- Arizona
- Florida
- Iowa
- Massachusetts
- New York
- Ohio
- Pennsylvania
- Washington

The BPR team also surveyed the Nuclear Regulatory Commission (NRC). Responses were received from all states except Illinois and Louisiana. (A contact list for participating states is provided in Appendix A.)

For the functional benchmark study, team members conducted interviews with the Registered Environmental Assessor Program within the Department of Environmental Health Hazard Assessment and the Division of Inspection Service within the Department of Food and Agriculture.

## 2.2 Develop Survey/Interview Instrument

The team then developed a comprehensive survey instrument. The survey consisted of 80 questions broken into the following components:

- Contact Information—name, organization, address, phone, fax, and e-mail
- Organization Size—staff, budget, and program scope
- Business Process Improvement—BPRs undertaken and associated outcomes
- Information Technology—computer systems used, level of information management provided, satisfaction, and use of specific technologies (Internet, voice response, workflow management, and document management)
- Organizational Structure and Business Operations—physical and organizational structure, billing processes, and regulation/policy development
- X-ray machine registration—pre-approval/authorization, roles of vendors and installers, use of machine-specific identifiers, and monitoring transfers
- Radiography certification (human and non-human use)—categories certified, test scheduling and administration, and training/schooling and continuing education documentation requirements
- X-ray machine and radioactive materials inspection—monthly volumes and backlog, inspection frequencies, scheduling, fees, tools, supervisory reviews, and inspection-specific performance measures
- Radioactive materials licensing—number of licenses issued, level and type of supporting documentation required, GLD tracking, fee structure, supervisory review, and amendment volumes and requirements
- Radiological assessment/environmental monitoring—activities conducted, organizational structure, funding, information management, manual and procedure standards

The team modified the survey instrument for interviews with the Registered Environmental Assessor Program and the Division of Inspection Service. Questions were limited to information technology, billing, and general licensing and inspection activities. (A copy of the complete survey instrument is included in Appendix B.)

## 2.3 Distribute Survey and Compile Findings

The team initially distributed surveys to the 18 RCPs by e-mail. Because several states use different word processing packages, team members also faxed surveys when requested. States were given approximately four weeks in which to complete surveys; however, many were not received for 5-6 weeks. The team then compiled data using Microsoft Word and Excel.

### 3.0 PRELIMINARY BEST PRACTICE OPPORTUNITIES

When identifying best practices, it is important to keep in mind two important evaluation criteria:

- Could the best practice positively affect RHB's service delivery? In other words, would processing time be reduced? Would customer service increase?
- Could the performance gap—between RHB right now and where it wants to go—be reduced? For example, could data RHB captured be more consistent and accurate than it is now? Or, could the practice help reduce RHB's inspection backlog?

This section presents interesting practices in other RCPs that may positively affect RHB's service delivery and lessen its performance gap. It is important to note that suggested practices are based on survey responses only and are therefore very preliminary in nature. For each practice identified, RHB will need to determine if practices warrant additional research.

The team identified best practice opportunities in the following areas:

- Information technology
- Organizational structure and business operations
- X-ray machine registration
- Radiography certification
- X-ray machine and radioactive materials inspection
- Radioactive materials licensing
- Radiological assessment/environmental monitoring

Each is discussed below.

#### 3.1 Information Technology

The NRC appears to be the strongest candidate for best practices in information technology. Its recently completed business process reengineering effort includes the implementation of the ADAMS system that will leverage Internet, scanning, workflow, and electronic storage technology.

It may be worthwhile to contact New York and Iowa on DataEase—an off-the-shelf scalable database application developed by Sapphire International.

Survey results show that several state radiologic control programs use document management technology. Nine states currently scan in forms, information, and reports of technologists' CE credits, copy photos, graphics and documents,

#### INTERNET TECHNOLOGY

An important best practice for RHB to seriously consider is the use of the Internet. RHB trails other states in terms of using Internet technology. It currently does not have an operational website. Yet, 14 of the 16 participating RCPs use the Internet to provide information and 10 offer the ability to download and print their own applications. The NRC plans to offer on-line interactive submission of applications and license renewal. It will be important, even as a quick win, for RHB to develop an informational website and offer forms that may be downloaded and printed.

produce training and presentation materials. RHB may benefit from expanding its current use to include these activities.

The team found little evidence of workflow management currently implemented in state programs. However, the NRC will use FileNET Ensemble within its ADAMS system that is coming on-line January 2000. In addition, New Jersey uses GroupWise for e-mail and scheduling, but it is unclear if the workflow management component is being used. It may be worthwhile to contact both programs to better gauge the level of use.

The team found no best practices on the use of automated/interactive voice response technology.

Several states may offer valuable lessons learned in procuring and implementing systems. New Jersey, Ohio, and Pennsylvania are currently developing and/or implementing new systems. In addition, Oregon attempted to develop a custom solution and is now considering GL Suite, an off-the-shelf licensing application developed by C<sub>2</sub>MS. Understanding Oregon's difficulty in pursuing a custom application and its strategy in considering off-the-shelf applications may help RHB avoid problems as it moves toward procuring a new system.

### 3.2 Organizational Structure and Business Operations

The team found potential best practices related to payment types, billing, and regulation development.

Two RCPs—South Carolina, and the NRC—offer payment by credit card and EFT. These programs may offer best practices in how to implement this payment type not in terms of technology but in terms of how it impacts the billing/fee collection process. In some cases, RHB currently bills after an application has been received and entered. If credit card or EFT payment were offered, RHB could capture a credit card or account number as part of the application process and enter it at the data entry point eliminating the need for billing after the fact.

The Regulated Environmental Assessor Program within the Department of Environmental Health Hazard Assessment currently accepts credit card payments. They use a Payment Tech terminal to enter credit card number and payment amount. The deposits then go directly to the Program's bank account. Payment amount must still be entered in the Program's primary database.

#### IOWA'S REGULATION DEVELOPMENT PROCESS

1. Staff discuss regulations and rules which are then placed in writing
2. Bureau Chief and the Division Director sign draft.
3. Staff hold public hearing to present regulation.
4. Board of Health approves the regulation.
5. Legislative Rules Committee approves regulation and publishes it in legislative bulletin.

Iowa may offer a best practice in regulation development. They, like RHB, must have application and policy requirements stated in law or regulation. However, unlike RHB—where regulation development and implementation can take up to three years, Iowa is able to develop and implement regulations within 5-6 months. This may be due to a less complex state regulation development process; however, it could also be due to staffing. Iowa is one of four responding states that have dedicated regulation staff. They have two staff working full time on regulation development and seeing proposals through the system. In theory, RHB has two full time staff also; however, they are also assigned other duties leaving regulation development to 1.0 FTE staff.

### 3.3 X-Ray Machine Registration

In the to-be registration process model, RHB pre-approves and registers facilities that wish to use X-ray machines. Five states—Iowa, Massachusetts, Oregon, South Carolina, and Texas—also appear to conduct some type of pre-approval or authorization and may, therefore, offer best practices in conducting this process. The fact that all five programs require a shielding plan review and two require designation of a responsible party may supplement the to-be process.

Two states—Iowa and North Carolina—use reports from vendors/installers to help track X-ray machine transfers. This could be used to supplement RHB's machine tracking process. In addition, Massachusetts and South Carolina issue X-ray machine stickers that inspectors use to identify machines. Given that RHB has considered issuing stickers, it may be worthwhile to contact these states to better understand the rationale for doing so and how it affects the registration process.

### 3.4 Radiography Certification

Best practices in certification revolve around non-industrial testing. Three states—Iowa, Massachusetts, and New York—use the American Registry of Radiologic Technicians (ARRT) for testing. Applicants schedule themselves for testing and ARRT administers the test thereby relieving the program of the administrative tasks associated with scheduling and administering exams.

Florida's partnership with Sylvan Test Centers mirrors that envisioned by the BPR team. Given that RHB is considering the very same option for its testing component, it can glean valuable information from Florida on contractual hurdles, interfaces with state systems, accountability, regulation changes, and migration from the old process to the new.

The team did not find best practices on illustrating proof of schooling/training completion. All states that have a certification program currently receive this information in hard copy format.

Florida also offers a potential best practice with respect to capturing and storing continuing education (CE) credits. They require CE providers to provide image-ready or electronic course attendance lists that are then uploaded to the state's certification database.

#### FLORIDA AND SYLVAN TEST CENTERS

Florida offers the most promising best practice with respect to testing. Beginning January 1, 2000 Sylvan Test Centers will conduct computer-based testing for all categories Florida certifies. (Sylvan will test Limited Permittees beginning January 2001.) This program eliminates Florida's involvement in scheduling and administering tests and provides excellent customer services in terms of flexibility of testing location and times.

### 3.5 X-Ray Machine and Radioactive Materials Inspection

The team identified several states that may offer best practices in the following areas: low backlog, supervisory review, and electronic transmission of inspection findings.

Florida and New York reported the lowest X-ray machine inspection backlog with less than 1% and 0% respectively. Neither program has a materials inspection backlog. It may be worthwhile to see what factors (complexity of inspection, number of inspectors/facility, etc.) contribute to this low backlog and determine how they might apply to RHB.

**ELECTRONIC SUBMISSION OF INSPECTION REPORTS**

Texas may offer a best practice on tools used to capture inspection data. Inspectors use notebook computers and calculators to capture information. Inspectors then submit reports electronically, using dial-up modem technology, from the field.

Neither Alaska, Florida, South Carolina nor Washington conduct supervisory reviews of X-ray machine inspection results, findings, and Notices of Violation. RHB may wish to inquire on how this process was achieved while maintaining high inspection quality.

Inspectors within the California Department of Food and Agriculture, Division of Inspection also transmit inspection report and sample data electronically. They also use Cannon Bubblejet 50 portable printers that hook up to their lap top to issue citations on-site. In addition, Food and Agriculture inspectors use digital cameras (Sony Mavica FD83) to capture evidence as well as digital images of citations (including facility signature).

**3.6 Radioactive Materials Licensing**

Fewer best practices were identified with respect to radioactive materials licensing than other areas surveyed. However, several useful ideas that may warrant further consideration were found.

One significant issue facing RHB's radioactive materials licensing program is streamlining and standardizing requirements associated with license issuance and amendments. The BPR team believes that if requirements can be standardized it will be easier to determine if requirements have been met satisfactorily. This could speed the licensing process and free technical reviewers for more complicated analyses. One potential means for standardization may be requiring a consistent license submission format. Ohio requires a standard format for facility description, and Texas requires one for identification of a radiation safety officer. Florida, Massachusetts, and the NRC require a format for sealed source and device sheet registries.

Another best practice may reside in Generally Licensed Devices (GLDs). RHB currently maintains files of GLD holders and captures the information in a separate Access database. Once RHB is able to formally register GLDs, it may be worthwhile to contact Florida, North Carolina, Iowa, Arizona, Washington, and/or Pennsylvania who also register GLDs.

A third potential best practice may be found in Washington's licensing program. The state issues licenses for moisture density and fixed gauges, small labs, and gas chromatographs without supervisory review. This would need to be further investigated to determine how quality and customer education are maintained.

**SIMPLIFIED RENEWAL REQUIREMENTS**

As a result of its business process reengineering effort, New York streamlined material licensing renewal requirements. Licensees no longer have to submit documents on aspects of their license that did not change.

**3.7 Radiological Assessment/Environmental Monitoring**

The objective of the survey questions of radiological assessment and environmental monitoring (RA/EM) was to obtain information on how states integrate this aspect of radiologic safety into their program and identify best practices on information technology used and procedures.

Based on survey data, the team could not identify a best practice with respect to integrating RAU into RHB. Organizationally, RA/EM resides as a stand-alone unit within the RCPs in 13 responding states. In the three remaining states, RA/EM is either within a separate state organization entirely or within the same parent organization as the radiologic control program.

#### STANDARDIZED PROCESSES AND PROCEDURES

In terms of standardized procedures, Texas is currently updating its survey and sampling procedure manual. RHB may wish to leverage Texas' work in creating its own manual. The NRC uses the Multi-Agency Radiation Survey and Site Investigation Manual that is available on the USEPA website. For decontamination and decommissioning plans, the NRC recently developed a draft Standard Review Plan for Decommissioning that RAU may wish to use.

With respect to information technology best practices, no RCPs stood out. However, it appears Ohio uses NRC's NMED application to capture and maintain RA/EM-related information. Alternatively, both Arkansas and Washington use an Access database. It would be interesting to see either of these alternatives—NMED or an Access database—could meet RAU's needs. Because NRC's ADAMS system will become the system of record for its RA/EM activities; it may be

worthwhile to contact the NRC and obtain more information on the software application, platform, and other technologies used.

### 3.8 Concluding Thoughts

As the findings illustrate, several states offer procedural and operational practices that may benefit RHB. Whether or not these best practices could be implemented at the Branch can only be determined through additional research. This research would entail the BPR team contacting the state, obtaining detailed documentation of their process and associated requirements, and comparing the state's process and requirements to those of the Branch.

While all states discussed above offer potential best practices, four states appear to offer promising opportunities that may be incorporated into the to-be processes. The team suggests that during the next phase of the BPR project contact be made with the following states:

- Massachusetts—pre-approval/registration process and sticker issuance
- Florida—Partnership with Sylvan Test Centers for non-industrial radiography certification, CE reporting, and X-ray machine inspection process (to better ascertain the reason for the low backlog and lack of supervisory review)
- Texas—Technology used to transmit inspection reports electronically from the field and impact to review process and pre-approval/registration process
- New York—Revised materials license renewal process where licensees only submit documentation for which there is a change

Should RHB wish to further research sticker issuance, it may be beneficial to also contact South Carolina.

## 4.0 ADDITIONAL SURVEY RESULTS

We present survey results in the same order as the original survey components. The findings to each are presented below. Please note that we include the Nuclear Regulatory Commission as an RCP. In addition, in the data tables, No Response (NR), indicates that a state did not submit information for a particular survey question or element. In addition, while California's data is included in the table presented, it was not part of the analysis.

### 4.1 Program Size and Scope

The purpose of this group of questions was to capture the size and scope of other state RCPs. Of the 11 states that responded to these questions, programs range in size from 1 staff in Alaska to 150 in Texas. Annual budgets for FY 1998-99 varied from \$120,000 to over \$7.3 million.

RCP	Staff	FY98-99 Budget	Registration Volume	Certification Volume	Mat. License Volume	# Annual X-ray Inspections	# Annual Mat. License Inspections
AK	1	120,000	350 machines	NR	NR	80-100	NR
AZ	30	1,679,900	9072 machines	NR	247	2536	155
AR	45	2,527,650	6,000 tubes	5,000	276	424 F	140
CA	142.5		60,000 machines	60,000	2,100	15,171 facilities	602
FL	109	6,203,347	35,888 machines	18,000	1,174	13,000	550
IA	14	1,245,000	2,546 machines	3,576	65-70	200	60
MA	NR	NR	4,614 facilities	8,000	39 (new)	453 facilities	168
NJ	NR	NR	NR	NR	NR	NR	NR
NY	37 (DOH), NR (HAZ)	4,060,000 (DOH) NR (HAZ)	10,700 facilities	14,000	511	700	235
NC	46	2,700,000	16,200 tubes	NR	655	5,000	370
OH	NR	NR	NR	NR	680	NR	200
OR	17	2,700,000	7,200	NR	450	2,000	120
PA	70	4,000,000	30,000	NR	430	7,500	108
SC	NR	NR	3,100 facilities	NR	311	900	160
TX	162 (BRC & TNRCC)	8,411,523 (BRC & TNRCC)	16,849 registrants	5,201	3,283	4,412	1,149
WA	NR	NR	5,454	NR	400	1,313	300
NRC	2985 (agency) 391 (mat. safety)	472,800,000 (agency) 46,300,000 (mat. safety)	NR	NR	NR	NR	NR

As Table 1 shows, states vary in how they count volumes for X-ray machine registration. With respect to staffing, it is important to note that numbers may or may not include open but no-filled positions and/or funded positions.

When asked to identify the scope of their RCP, most states conduct similar activities (registration, certification, licensing, inspection, and radiologic assessment.) as shown in Table 2 below.

**Table 2: Scope of Activities**

Activity	AK	AZ	AR	CA	FL	IA	MA	NY	NJ	NC	OH	OR	PA	SC	TX	WA	NRC
X-ray mach. registration	X	X	X	X	X	X	X	X <sup>1</sup>	X	X		X	X	X	X	X	
Radiography certification			X	X	X	X	X	X <sup>1</sup>	X						X		
X-ray mach. inspection	X	X	X	X	X	X	X	X <sup>1</sup>	X	X		X	X	X	X	X	
Radioactive materials inspection		X	X	X	X	X	X	X <sup>2</sup>	X	X	X	X	X	X	X	X	X
Radioactive materials licensing			X	X	X	X	X	X <sup>2</sup>	X	X	X	X	X	X	X	X	X
Oversight for radioactive decomm..			X	X	X	X	X	X <sup>2</sup>	X	X	X		X	X	X	X	X
RA/EM		X	X	X	X	X	X	X <sup>2</sup>	X	X	X	X	X	X	X	X	X
Billing and cashiering of fees	X	X		X		X	X	X <sup>1</sup>	X <sup>3</sup>	X	X	X		X	X	X	X

1-Conducted by Department of Health

2-Conducted by Bureau of Radiation and Hazardous Site Management

3-Billing only

Ohio is the only state whose program does not include X-ray machine registration. North Carolina does not require certification, and, in Pennsylvania, certification is conducted by the Secretary of State. Alaska's program is the most limited (registration and X-ray machine inspection are the only activities conducted).

## 4.2 Business Process Improvement

The BPR team asked about improvement, quality, or reengineering efforts in order to find out which, if any, RCPs had undertaken an improvement effort of its own. Seven of 16 responding states have conducted business process improvement efforts within the last two years. Table 3 below presents outcomes identified by these states.

RCP	Outcomes
Arkansas	<ul style="list-style-type: none"> <li>▪ Improved work processes</li> <li>▪ Eliminated unnecessary/outdated work requirement</li> <li>▪ Reduced program budget</li> </ul>
New Jersey	<ul style="list-style-type: none"> <li>▪ Moved to QA based inspections</li> <li>▪ Updated regulations</li> <li>▪ Developed new database to manage X-ray machine registrations and inspections and radiologic technologist licensure</li> <li>▪ Administered computerized licensing exams</li> </ul>
New York	<ul style="list-style-type: none"> <li>▪ Moved issuance of X-ray facility and radiography technologist registration and license documents to program</li> <li>▪ Reduced turnaround time</li> <li>▪ Reduced information RM licensee must submit for renewal (do not resubmit documents that did not change)</li> </ul>
North Carolina	<ul style="list-style-type: none"> <li>▪ Increased focus on customer service</li> <li>▪ Reduced paperwork</li> <li>▪ Reduced process steps</li> <li>▪ Provided greater licensee flexibility</li> </ul>
South Carolina	<ul style="list-style-type: none"> <li>▪ Revised inspection forms and processes</li> <li>▪ Updated computer support software</li> <li>▪ Improved relations with regulated community</li> <li>▪ Moved toward to outcome-based inspections and program</li> </ul>
Texas	<ul style="list-style-type: none"> <li>▪ Reduced X-ray registration backlog</li> <li>▪ Reduced information needed for registration</li> <li>▪ Enabled inspectors to present NOV to registrant after inspection</li> </ul>
NRC	<ul style="list-style-type: none"> <li>▪ Consolidated licensing guidance (NUREG-1556)</li> <li>▪ Created Regulatory Product Development Center</li> <li>▪ Developed Team/Working Group approach</li> <li>▪ Created Technical Assistance Request Database</li> </ul>

Oregon also conducted an improvement effort. In all cases, with the exception of New Jersey's effort, improvements did not require changes to regulations.

### 4.3 Information Technology

Questions on information technology focused on the types of systems used, level of support from and satisfaction with systems, and other technologies used.

RCP	Custom Development	Off-the Shelf
AK	Implemented/developed prior to 19950	Uses Microsoft software and standard products but is not a package in the sense of being specific to radiological health
AZ	Implemented/developed in 1996	
AR	Implemented/developed in 1986; Wang system for budgets/accounting/fee collection throughout DOH	
CA	Implemented in the 1980s by internal staff (System is a transfer solution based upon a general licensing application originally developed for the CA Department of Consumer Affairs.)	Several Access databases for cashiering and materials licensing supplement activities; however, data are not linked.
FL	Implemented/developed in 1980s; RML, registration, technologist enforcement were internally developed	Use License Manager System by Professional Examination Service of New York City; implemented in 1989 to support technologist certification
IA		Uses DataEase
MA		Uses Dbase III and IV and Access
NJ	Implemented/developed in 1998-99 by Systematrix Design Group LLC in Old Bridge NJ	
NY	Implemented/developed in 1993 by internal staff	Uses DataEase
NC	Implemented/developed in 1985 by internal staff	
OH	Under development; uses Oracle and Powerbuilder. A contractor developed screens and reports.	
OR	implemented/developed in 1985-1988 by internal staff	Considering GL Suite for system replacement
PA	Implemented/developed in 1997-99	
SC	Implemented/developed in 1998-99 by internal staff	
TX	Implemented/developed in 1984 by internal data processing and RCB admin staff)	
WA	Implemented/developed in 1990; upgraded in 1998 by internal staff. Paradox is used for X-ray and Access for Materials	
NRC	No Response	

As Table 4 shows, most states that have custom solutions used internal staff to develop their systems. Three states—New Jersey, Ohio, and Pennsylvania—are currently developing and/or implementing new custom solutions.

Iowa and Massachusetts have off-the-shelf systems. Iowa uses DataEase—a scalable database application developed by Sapphire International. They noted that the DataEase application does not support all of the program's activities. It is interesting to note that New York also uses DataEase. Massachusetts uses an application built in Dbase III and IV and Microsoft Access.

Thirteen states responded that their current systems do not support all their activities. (Two responded that their systems did support all activities and one state did not respond.) In most instances, states use manual processes, word processing software, and specific measurement calculation software to supplement technical activities. Yet, nine states reported satisfaction with

their systems. Those five states not satisfied report problems with integration, user-friendliness, and Y2K compatibility. Two states did not respond.

Table 5 below presents survey results on Internet and automated/interactive voice response technology use.

Table 5: Use of Internet and Automated/Interactive Voice Response (AVR/IVR) Technologies			
Internet Use	Yes	No	California
- General information for the public and customers	14	2	no
- Applications that may be downloaded/requested	10	6	no
- On-line/interactive submission of applications	1	15	no
- Registration, certification and/or license renewal	1	16	no
- Fee payment	0	16	no
- Other: Response to inquiries, rule revision information, communication, information on NRC, FDA, etc.	4	0	no
- Not used	2	0	no
AVR/IVR	Yes	No	California
- General information for the public and customers	2	13	no
- Applications that may be downloaded/requested	0	15	no
- On-line/interactive submission of applications	0	15	no
- Registration, certification and/or license renewal	0	15	no
- Fee payment	0	15	no
- Other answers to inquiries	0	15	no
- Not used	13	2	no

Neither Arizona nor Arkansas use Internet technologies. The NRC will offer on-line submission of applications as part of the ADAMS system implementation. In addition, Pennsylvania plans to offer on-line submission pending the State's e-commerce program and South Carolina is planning to offer this type of service delivery.

Florida and North Carolina are the only states that have automated voice response telephone technology. North Carolina, however, has elected to answer incoming calls directly as part of a customer service improvement effort. (One state did not respond.)

The survey also included questions on the use of document management technologies, workflow management, and electronic storage of documents as shown in Table 6 below.

RCP	Document Management	Workflow Management	Electronic Storage
AK			X
AZ			
AR			
CA	X		
FL	X		
IA	X		
MA			X
NJ		X	
NY	X		
NC	X		X
OH	X		
OR			
PA	X		
SC			
TX	X		
WA	X		
NRC	X	X	X

Nine states use scanning technology to upload attendance reports at continuing education courses, input forms, copy photos and documents, and to insert graphics and pictures for training and presentation materials. Only New Jersey and the NRC appear to use workflow management software (GroupWise and FileNET Ensemble).

#### **4.4 Organizational Structure and Business Operations**

Survey questions focused on how other state RCPs are structured and if an optimal organizational model for a RCP could be developed. The team also inquired on fee collection since RHB recently moved to conducting its own billing and cashing and is considering taking on bank deposit preparation. Finally, because regulation development is an arduous task for RHB, the team also sought insights from other states on how they develop regulations.

In terms of physical organization, ten states are centralized and six have regional offices. Texas has the most regional offices with 11 but these are for inspection only.

Only four RCPs offer telecommuting. All four states provide telecommuting to inspection staff and some offer telecommuting to leadership staff.

With respect to payment options, Ohio, South Carolina, and the NRC offer payment by credit card as shown in Table 7 below. It is interesting to note that just under half of the responding states do not accept cash payment.

RCP	Cash	Check	Credit Card	Electronic Funds Transfer	Debit Card
AK	X				
AZ		X		X	
AR	X	X			
CA	X	X			
FL		X		X	
IA	X	X			
MA	X	X		X	
NJ		X			
NY		X			
NC	X	X		X	
OH	X	X	X		
OR		X			
PA		X			
SC	X	X	X	X	
TX	X	X		X	
WA	X	X			
NRC		X	X	X	

When asked how check payment is verified, only two states actually verify payment but it appears to occur once the check has cleared or after receipt. None of the RCPs that provide credit card or EFT payment offer incentives or discounts.

The majority of responding RCPs conduct their own payment processing. Of the ten that do process their own payments, six RCPs also conduct bank deposit preparation and accounting.

When asked how dishonored checks are handled, in almost all cases, the process is similar across responding states. In short, a letter is sent. However, four states will revoke a license if payment is not received after the insufficient funds notice is sent out.

Given the fact that regulation development to implementation can take up to three years in California, the team hoped to find best practices in regulation development in other states. However, in all cases, the process appears to be equally cumbersome and generally involves the following activities:

1. Program staff draft initial regulation
2. Departmental staff conduct first review of proposed regulation
3. Staff present proposed regulation to advisory/leadership committee or board
4. Program staff hold public meetings or hearings
5. Advisory/leadership committee or board provides final approval
6. Program staff file final regulation
7. State adopts regulation

The actual duration from development to implementation takes between six months to two years depending on the state. In terms of staffing, most programs use 1-2 FTE for regulation development/change. Only four states have dedicated regulation staff; the rest use program staff as available.

## 4.5 X-Ray Machine Registration

When asked if states allows vendors, installers, and/or manufacturers to register an X-ray machine on customer's behalf, 13 responding states do not. Only New Jersey allows this; however, it noted that the responsible party must sign the application. (Two states did not provide responses.) No state restricts vendors, installers or manufacturers from working on unregistered machines.

Five states—Iowa, Massachusetts, Oregon, South Carolina and Texas—require pre-authorization to operate an X-ray machine prior to purchase/installation. (Texas indicates that this is only the case with accelerators, service providers, and industrial radiography).

RCP	Pre-Approval Components	Process
Iowa	Shielding plan review	Submit shielding for review, reviewed by staff, letter sent saying it meets standards.
Massachusetts	Shielding plan review, designation of responsible party	Shielding plan review and approval
Oregon	Shielding plan review	No Response
South Carolina	Shielding plan review, designation of responsible party, Radiation Protection Program, Operating policies and procedures	Facility must submit facility approval application, operating procedures, and shielding plan, if required. Submittal is reviewed and approval letter granted if OK.
Texas	Shielding plan review, designation of responsible party, Radiation Protection Program, pertinent facts	Application and registration process; sometimes a site visit is conducted.

As noted in Table 8 above, all five states require a shielding plan review. Texas and Massachusetts also require designation of a responsible party. Texas also requires a Radiation Protection Program, other pertinent facts, and in some cases a site visit.

Only Oregon and Massachusetts issue machine-specific identification such as a sticker. In both cases, these stickers do not have an expiration date. Inspectors use the stickers to identify machines in both states.

Tracking transfers of X-ray machines varies among RCPs. Some states receive notification or reports from installers and registered service companies. Others require the facility to submit a form. Pennsylvania uses FDA Vendor Notification Form 2579 (RHB also uses his form to identify unregistered machines). Finally, some states identify transferred machines at the time of inspection.

## 4.6 Radiography Certification

States vary significantly in the types of personnel certification offered, as Table 9 below shows.

Category	Certifies	Testing Required	Not Certified	California
Nuclear medicine	7	7	8	X
Therapeutic technologist	8	5	5	X
Diagnostic radiologic technologist	8	5	5	X
Mammography	6	3	9	X
Supervisor/operator	1	1	13	X
Industrial radiographer (X-ray)	5	3	4	
Industrial radiography (materials)	6	4	3	
Limited permit	6	4	11	X
Other (Radon)	1	1		

Ohio only certifies X-ray industrial radiographers. Certification is delegated to another state organization in Oregon, Pennsylvania, South Carolina, and Texas. It appears that Alaska, North Carolina, and the NRC do not conduct certification.

The survey asked several questions on certification testing. In terms of scheduling and administering examinations, the process varies among states. Program staff schedule examinations in some states whereas other states require applicants to schedule themselves for tests.

Several states do not administer tests and require applicants to test through the American Registry of Radiologic Technologists. Alternatively, Texas offers monthly testing and New Jersey offers testing three times a year. Arkansas has outsourced its testing process to a testing center and beginning in January 2000, Florida will outsource testing for all categories except limited permittees to Sylvan Test Center. (Sylvan will offer testing for limited permittees beginning January 2001.) By doing so, testing will be available throughout the year.

Only New Jersey and New York currently offer computer-based testing. As noted above, by outsourcing to Sylvan, Florida will also offer computer-based testing. Arkansas also plans to move to this type of testing.

The eight states that have certification programs all require verification of education and training. In all cases, these states use hard copy documentation to verify education and training. Verification of continuing education (CE) is also required by these states and is received in hard copy format from either the certificate holder or CE provider. Florida requires CE providers to send either electronic or scanable course attendance lists that are then uploaded to the state's certification database. (Hard copy documentation is also accepted.)

## 4.7 X-Ray Machine and Radioactive Materials Inspection

Questions on inspection focused on monthly volumes and backlog, frequencies, scheduling, supervisory reviews, and inspection-specific performance measures.

As Table 10 below shows, the number of X-ray machine inspections conducted per month ranges from 12-18 facilities or 40-620 tubes whereas the number of radioactive materials inspections ranges from 1-8 sites/facilities per month.

RCP	X-ray Machine		Materials	
	Monthly No.	Backlog	Monthly No.	Backlog
AK	12 machines	NR	0	NR
AZ	50 machines	155 (5%)	6	247 (6%)
AR	40 tubes	366 (86%)	NR	0
CA	30 machines	1850 (57%)	6	0
FL	50 machines	75 (>1%)	1-2	0
IA	20.5 machines	NR	2-3	0
MA	48 facilities	NR	5	NR
NJ	85 tubes	10953 (67%)	6	66%
NY	14 facilities	0	6	0
NC	63 tubes	750 (15%)	5-7	0
OH	NR	NR	2-3	0
OR	NR	NR	NR	NR
PA	7500	NR	108	NR
SC	15 facilities	700 (22%)	3	0)
TE	17 registrants/9 mammo	3900 (88%)	8	0
WA	18.2 facilities	1036 (78.9%)	5	16
NRC	0 (not conducted)	N/A		0

In terms of inspection backlogs states vary significantly, particularly in X-ray machine inspections. Backlogs vary from less than 1% of the total inspection caseload to over 85%. For radioactive materials inspections, backlogs are significantly smaller; in fact, nine RCPs report no backlog.

While RCPs use varying definitions, overall inspection frequencies tend to be similar among states for both X-ray machines and materials. These frequencies appear to be in alignment with the frequencies RHB uses.

RCPs also vary in whether or not they conduct scheduled and/or unannounced inspections as shown in Table 11 below.

Table 11: Number of RCPs Conducting Scheduled or Unannounced Inspections		
Inspection Type	No. RCPS	California
<b>X-ray Machine Inspections</b>		
X-ray Scheduled	6 (AR, FL, MA, PA., SC, WA)	X
X-ray Unannounced	2 (AZ, IA)	
Both Scheduled and Announced X-ray Inspections	4 (NY, NJ, NC, TX)	
No Response to X-ray Inspections	4 (AK, OH, OR, NRC)	
<b>Materials Inspections</b>		
Materials Scheduled	1 (PA)	
Materials Unannounced	7 (AZ, IA, MA, NY, NJ, OH, SC)	
Both Scheduled and Unannounced Materials	5 (AR, FL, NC, TX, WA)	X
No Response to Materials Inspections	3 (AK, OR, NRC)	

In terms of scheduling inspections, in most RCPs inspectors schedule their own visits whereas in others, a supervisor schedules inspections. Only one state uses an administrative support person to schedule inspections.

A preset cycle triggers inspections in all RCPs. Complaints, previous violations, and significant program changes may also trigger an inspection.

Only New York charges a separate fee for an X-ray machine inspection; Ohio and Iowa charge for materials inspections. The remaining RCPs do not charge an inspection fee for either machine or materials inspections.

With respect to the inspection and report writing itself, seven RCPs rely on paper forms only. The remainder use lap top computers and a combination of computers and paper forms. Some RCPs also use hand held measurement devices.

Twelve RCPs require a supervisory review of results, findings, and/or Notices of Violation prior to release to the facility. Florida, South Carolina, and Washington do not require supervisory review for most inspections. One state did not provide a response.

Most RCPs do not keep track of inspection-related performance data such as travel time, inspection time, etc. The five RCPs that do track such data capture information on inspection preparation, site visit, and report writing time via timesheets and/or databases.

## 4.8 Radioactive Materials Licensing

Table 12 below presents the total number of specific licenses issued by each of the participating RCPs.

RCP	Broadscope	Medical	Academic	Industrial	Other
AK	NRC handles all RAM licensing. Accelerator materials are registered but not inspected.				
AZ	NR	NR	NR	NR	NR
AR	4	80	7	139	30
CA	100	547	100	1304	NR
FL	13	605	4	497	55
IA	2	52	10	6	92
MA	38	77	15	206	140
NJ	6	2333	4	97	42
NY	20	350	41	0	100
NC	16	190	11	222	70
OH	35	320	20	305	NR
OR	NR	NR	NR	NR	NR
PA	NR	NR	NR	NR	430
SC	3	92	6	147	63
TX	26	563	52	817	39
WA	NR	NR	NR	NR	NR
NRC	248	1689	56	3127	178

When asked on supporting documentation requirements for materials licenses, RCPs appear to be consistent as shown in Table 13 below.

License Component	Supporting Doc. is Required	Equivalent Procedures are Offered	Standard Format is Required
Facility/facilities description	14/CA	6	1
Radiation Safety Officer/ Individual Users	14/CA	6	1/CA
Radiation Safety Program (includes operating and emergency procedures and internal inspection)	14/CA	9	0
Effluent/environmental monitoring	14/CA	6	0
Instrument calibration	14	11	0
Waste disposal	14/CA	9	0
Training program	14/CA	8	0/CA
Organizational structure	13/CA	6	0
Radiation detection instruments	14/CA	6	0
Personnel monitoring/bioassay procedures	14/CA	9	0
Decommissioning/decontamination	13/CA	4	0
Financial surety	11	3	0
Sealed source and device sheet registry	12	6	3
Medical gamma camera/ dose calibrator quality control program	14	8	0
Leak testing	14/CA	8/CA	0

Of the 14 RCPs that provided responses, most require supporting documentation for various license components; however the number of states offering equivalent procedures varies depending on the license components. Ohio requires a standard format for facility descriptions and Texas requires one for RSO documentation. Florida, Massachusetts, and the NRC are the only RCPs requiring a standard format for sealed source and device sheet registries. (Two RCPs did not respond.)

The survey also inquired on how RCPs handled Generally Licensed Devices (GLDs). Of the 14 RCPs that responded to this question, eight register GLDs; only two issue licenses. The remaining four RCPs either record receipts or maintain a file.

Table 14 below presents the number of materials license amendments and renewals processed by each RCP annually.

RCP	No. Renewals	No. Amendments
AK	No Response	No Response
AZ	45	296
AR	15-20	245-250
CA	77	1200
FL	130-300	1300-1500
IA	25	60
MA	1	300+
NJ	80	380
NY	120	340
NC	70-80	500-600
OH	0 (just started issuing licenses two years ago)	156 (Got agreement 8/31/99 and have processed 156 through the middle of October)
OR	No Response	No Response
PA	90	240
SC	60	350
TX	250 in FY 1998	2020 in FY 1998
WA	60	180
NRC	66	2650

Almost all responding RCPs require amendments for change of possession limits and personnel changes; yet only five RCPs require an amendment for non-safety procedure changes. No state requires a specific format for submitting amendments. (Two RCPs did not respond.)

Twelve RCPs require an annual fee; Iowa and New York do not. (Two RCPs did not respond.) In most cases the fee is based on category of usage; some RCPs add other elements such as possession limit or a flat fee. Texas also bases its fee on the type of license whereas North Carolina includes an estimated inspection cost. New Jersey appears to have the most complex fee structure with annual fees based on possession limit, sealed source vs. unsealed, and category of usage.

When asked if supervisory review was required for certain license types, 12 RCPs indicated that all specific licenses require supervisory review prior to issuance. Washington and Pennsylvania are the only responding RCPs that do not require reviews for gauge (moisture density and fixed), small laboratories, gas chromatographs, and X-ray fluorescent analyzers. (Two RCPs did not respond.)

## 4.9 Radiological Assessment/Environmental Monitoring

The objective of the survey questions of radiological assessment and environmental monitoring (RA/EM) was to obtain information on how RCPs integrate this aspect of radiologic safety into their program, information technology used, and procedures.

Organizationally, RA/EM resides as a stand-alone unit within the RCP in 13 RCPs. In the three remaining RCPs, RA/EM is either within a separate state organization entirely or within the same parent organization as the RCP. With respect to activities conducted by each RA/EM unit, RCPs vary in scope as Table 15 below shows.

Activity	No. RCPs	California
Environmental sampling (surface wipes, water, air, soil, etc.)	15	X
Environ. radiation monitoring	13	X
Confirmatory surveys for D&D	14	X
Laboratory analysis	13	limited
Off-site monitoring (Nuclear power plants, Dept. of Energy, Dept. of Defense)	9	X
D&D plan review and evaluation	11	X
Public meetings (Provide information, participate)	14	X
Termination surveys for licensees/registrants	12	X
Emergency response	15	X
Instrument calibration	8	X
Instrument repair	4	
NESHAP sampling (State, Federal)	4	
Incident investigation	11	X
Response to public inquiries	14	X
Human health risk assessment	7	X

While most states' RA/EM programs conduct similar activities, the team found variation in which RCPs conduct off-site monitoring, instrument calibration and repair, NESHAP sampling and human health risk assessment. (One state did not respond.)

When asked about how a state's RA/EM program is funded, responses varied significantly. In some states RA/EM activities are funded through a state appropriation; others use fees, grants, or contracts for funding. Several states receive funding through a variety of funding mechanisms whereas a few states have one funding source.

States reported that RA/EM information is maintained either via paper files, an information system, or a combination of both. Four states use only paper, three use only computers (Arizona, Arkansas, and Washington), and seven use a combination of the two. (One state did not respond.) Applications or systems used varied among those states that use information technology. State use MS Access, dBase, Canberra VAX, the NRC NMED, Quatro Pro, and Excel.

In terms of standardized procedures, nine states report having a standardized survey and sampling procedure manual. Only the NRC reporting having a draft plan of standard review procedures for decontamination and decommissioning plans.

## APPENDIX A: SURVEY PARTICIPANTS

RCP	Contact Information	
Alaska	Clyde E. Pearce Radiologic Health Program, Section of State Labs 527 E. Fourth Avenue, #7 Anchorage, AR 99501 907/269-7944 <a href="mailto:clyde_pearce@health.state.ak.us">clyde_pearce@health.state.ak.us</a>	
Arizona	Aubry Godwin Arizona Radiation Regulatory Agency 4814 South 40 <sup>th</sup> Street Phoenix, AZ 85040 602/259-4845 <a href="mailto:agodwin@arra.state.az.us">agodwin@arra.state.az.us</a>	
Arkansas	David D. Snellings, Jr. Arkansas Department of Health 4815 Wesy Markham Slot # 30 Little Rock, AR 72205 501/661-2179 <a href="mailto:dsnellings@mail.doh.state.ar.us">dsnellings@mail.doh.state.ar.us</a>	
Florida	William Passetti Department of Health, Bureau of Radiation Control Bin C21, 2020 Capital Circle SE Tallahassee, FL 32399-1741 850/487-1004 <a href="mailto:bill_passetti@doh.st.fl.us">bill_passetti@doh.st.fl.us</a>	
Iowa	Donald A. Flater, Chief Iowa Department of Public Health, Bureau of Radiologic Health Lucas State Office Building Des Moines, IA 50319-0075 515/281-3478 <a href="mailto:Dflater@idph.state.ia.us">Dflater@idph.state.ia.us</a>	
Massachusetts	Robert M. Hallisey Radiation Control Program 124 Portland Street <i>city/state, zip needed</i> 617/727-6214 <a href="mailto:bob.hallisey@state.ma.us">bob.hallisey@state.ma.us</a>	
New Jersey	Anthony McMahon Department of Environmental Protection Radiation Protection Program, Bureau of Radiological Health P.O. Box 415 Trenton, NJ 08625 609/984-5634 <a href="mailto:amcmahon@dep.state.nj.us">amcmahon@dep.state.nj.us</a>	
New York	Karim Rimawi State Department of Health 547 River Street Troy, NY 12180-2216 518/402-7550 <a href="mailto:kxro1@health.state.ny.us">kxro1@health.state.ny.us</a>	Paul Merges, Ph.D. Bureau of Radiation and Hazardous Site Management New York State Department of Environmental Conservation 50 Wolf Road Albany, NY 12233-7255 518/457-9240 <a href="mailto:pjmerges@gw.dec.state.ny.us">pjmerges@gw.dec.state.ny.us</a>
North Carolina	Richard Fry, CHP DENR Division of Radiation Protection 3825 Barrett Drive Raleigh, NC 27609-7221 919/571-4141 <a href="mailto:mel.fry@ncmail.net">mel.fry@ncmail.net</a>	

RCP	Contact Information
Ohio	Roger Suppes Ohio Department of Health, Bureau of Radiation Protection 246 N. High Street Columbus, OH 43266 614/644-2727 Rsuppes@gw.odh.state.oh.us
Oregon	Ray D. Paris Oregon Health Division, Radiation Protection Services 800 NE Oregon Street Portland, OR 97232 503/731-4014 ray.d.paris@state.or.us
Pennsylvania	David Allard Pennsylvania Department of Environmental Protection Bureau of Radiation Protection P.O. Box 8469 Harrisburg, PA 17105-8469 717/787-2480 allard.david@dep.state.pa.us
South Carolina	T. Pearce O'Kelley Radiological Health Branch, South Carolina Department of Health and Environmental Control 2600 Bull Street Columbia, SC 29201 803/737-7403 Okelletp@columbia54.dhec.state.sc.us
Texas	Richard Ratliff Texas Department of Health, Bureau of Radiation Control 1100 W. 49 <sup>th</sup> Street Austin, TX 78756 512/834-6688 Richard.Ratliff@tdh.state.tx.us
Washington	John Erickson Radiation Protection, Department of Health P.O. Box 47827 Olympia, WA 98504-7827 360/236-3210 jle0303@doh.wa.gov
Nuclear Regulatory Commission	Richard Blanton Office of State Programs, U.S. NRC One White Flint North, 11155 Rockville Pike Rockville, MD (301) 415-2322 rib@nrc.gov

## APPENDIX B: SURVEY INSTRUMENT

### *Introduction*

The Radiologic Health Branch (RHB) within the California Department of Health Services is responsible for providing the public health functions associated with maintaining a radiation safety program. This includes licensing of radioactive materials, registration of X-ray producing machines, certification of individuals, inspection of facilities, and enforcement actions. Today, RHB regulates almost 24,000 x-ray facilities, 60,000 machines, and 2,100 radioactive materials holders. In addition, it certifies 60,000 individuals and 900 mammography facilities.

In 1998, RHB began the Computer Utilization for Radiation Inspection and Enforcement (CURIE) improvement project. The goal is to improve overall Branch operations and procure supporting technology. As part of this effort, RHB is conducting a best practice and benchmark study of selected states to identify business practices in other radiologic programs that may be helpful to the Branch.

### *Overview of Survey Instrument*

The goal of this survey instrument is to obtain information on current operations and business practices that RHB may wish to use as part of the CURIE improvement effort. Depending on the responses provided, we may wish to contact you again for more detailed information on a particular business practice. In addition, we will be pleased to forward you a copy of the survey results and findings.

Survey questions are broken into the following categories:

- *Contact Information*—who you are and how we may contact you
- *Organization Size*—staff, budget, and program scope
- *Business Process Improvement*—what improvement efforts you have undertaken
- *Information Technology*—types of computer systems you currently use
- *Organizational Structure and Business Operations*—potential organizational and operational improvements

In addition, we ask specific questions in the following areas:

- X-ray machine registration
- Radiography certification (human and non-human use)
- X-ray machine inspection
- Radioactive materials inspection
- Radioactive materials licensing
- Radiological assessment/environmental monitoring

**Please return completed surveys by October 29, 1999.**

Surveys and attachments can be returned to: [pedgerton@dhs.ca.gov](mailto:pedgerton@dhs.ca.gov)

Completed surveys and associated documentation may also be sent to:

Trisha Edgerton, Technical Advisor CURIE BPR  
Radiologic Health Branch, Department of Health Services  
P.O. Box 942732 MS-178  
Sacramento, California 94234-7320

if you have any questions on the survey or would like additional information about RHB's BPR project, please contact Trisha Edgerton ([916] 327-0964) or Grietje Bogdan ([916] 327-0340).

**A. Contact Information**

Name:

Organization Name:

State:

Title:

Address:

Phone and Fax Numbers:

E-mail/Internet Address:

**B. Organization Size**

Number of Staff:

1998 Budget:

Which of the following are conducted by your organization? (Check those that apply)

<input type="checkbox"/>	X-ray machine registration	Total #	<input type="text"/>
<input type="checkbox"/>	Radiography certification	Total #	<input type="text"/>
<input type="checkbox"/>	X-Ray machine inspection	Total #/yr	<input type="text"/>
<input type="checkbox"/>	Radioactive materials inspection	Total #/yr	<input type="text"/>
<input type="checkbox"/>	Radioactive materials licensing	Total #	<input type="text"/>
<input type="checkbox"/>	Oversight for radioactive decommissioning	Total #/yr	<input type="text"/>
<input type="checkbox"/>	Radiological assessment/ environmental monitoring		
<input type="checkbox"/>	Billing and cashing of fees		

**C. Business Process Improvement**

1. Have you recently participated in any business process reengineering or improvement efforts?  Yes  No

2. If yes, when?

3. What were the four most significant outcomes or changes to your organization?

- a.
- b.
- c.
- d.

4. Did these improvements require legislative and or regulatory changes?  
 \_\_\_ Yes \_\_\_ No If yes, please describe these changes.

***D. Information Technology***

1. Do you use information technology (i.e., computer systems) to support your organization's core registration, certification, licensing, and inspection operations? \_\_\_ Yes \_\_\_ No

2. Is the system a custom application? \_\_\_ Yes \_\_\_ No  
 If yes, who developed it?

3. When was the system implemented?

4. Or is the system a commercial off-the-shelf solution? \_\_\_ Yes \_\_\_ No  
 If yes, what is the name of the package and/or vendor?

5. When did you purchase it?

6. Does this system support all your activities? \_\_\_ Yes \_\_\_ No  
 If not, what other systems or applications do you use and for what purpose?

7. Are you satisfied with this/these system(s)? \_\_\_ Yes \_\_\_ No  
 If no, please describe some of the deficiencies.

8. Do you use the Internet (or web-based software) and/or automated or interactive voice response (AVR/IVR) telephone systems for the following? (Check all that apply)

Internet	AVR/IVR	
_____	_____	General information for the public and customers
_____	_____	Applications that may be downloaded/requested
_____	_____	On-line/interactive submission of applications
_____	_____	Registration, certification and/or license renewal
_____	_____	Fee payment
_____	_____	Other _____
_____	_____	The specific technology is not used

9. If you use a web-based application, what is the name of the software?

10. Do you use scanning/imaging technology?  Yes  No  
For what purpose?

11. Do you use workflow management (i.e., automated routing of documents) software?  
 Yes  No

12. Do you store certificates and/or licenses electronically in lieu of hard copy files?  
 Yes  No

13. Should we have additional questions specific to information technology within your organization, whom should we contact?

Name: \_\_\_\_\_ Phone: \_\_\_\_\_

E-mail: \_\_\_\_\_

### ***E. Organizational Structure and Business Operations***

1. Please describe your program's organizational structure including staffing per organizational unit. Please attach a current organizational chart if possible.

2. How is your program physically organized? (Select one)

- Centralized in one main office  
 Regional offices throughout the state (# of Regional offices: \_\_\_\_\_)

3. Do you offer telecommuting?  Yes  No

If yes, which types of employees telecommute and what jobs do they perform?

4. What payment options do you offer? (Check those that apply.)

Cash     Check     Credit Card     Electronic  
Funds Transfer (EFT)     Debit Card

5. If check, how do you verify availability of funds?

6. If applicable, do you offer incentives for payment by credit card and EFT?

Yes     No Is so, please describe them.

7. Do you charge a service fee for credit card and EFT payment?     Yes     No  
If yes, what is the amount?

8. Does your organization process payments?     Yes     No

9. Does this include bank deposit preparation and accounting?     Yes     No

10. How do you process dishonored checks and/or insufficient payment?

11. Do you process refunds for overpayment?     Yes     No

If no, do you credit a customer's account?     Yes     No

12. California agencies may not enforce any standard of general application that is not contained in the law or regulations. Is this true for your organization?     Yes     No

13. What is the process (activities, staff involved, reviews) for regulation/policy and procedure development and approval in your organization?

14. How are changes to regulations/policies and procedures made?

15. What is the timeframe for implementing a new/changed regulation/policy or procedure?

16. How often are regulations/policies and procedures updated?

17. How many staff (FTE) support regulation/policy and procedure development in your organization?

***F. X-ray Machine Registration***

1. Do you require/allow vendors, installers, and/or manufacturers to register x-ray machines for customers?  Yes  No

2. Do you require registrants to obtain state pre-approval or authorization to operate prior to purchase and/or installation of an x-ray machine?  Yes  No

If yes, what does this pre-approval entail? (Check all that apply)

- Shielding plan review
- Radiation Protection Program
- Designation of a responsible party
- Other \_\_\_\_\_

3. If applicable, how is the pre-approval conducted?

4. Do you restrict vendors, installers, and/or manufacturers from working on machines that are not registered?  Yes  No If yes, how is this enforced?

5. Upon installation, do you require x-ray machines to be inspected prior to use?  
 Yes  No If yes, for what machine types?

6. Do you issue machine specific identification such as a sticker or barcode to identify registered machines?  Yes  No

If yes, do these stickers or codes have an expiration date?  Yes  No

7. Do inspectors use these stickers or codes?  Yes  No If yes, how?

8. How do you monitor the transfer of machines from one facility to another?

### ***G. Radiography Certification (Human and Non-Human Use)***

1. What categories of radiologic technology users and supervisors require certification by your organization? (Respond Y [yes] N [no])

Category	Requires Certification	Requires Testing
Nuclear medicine technologist		
Therapeutic technologist		
Diagnostic radiologic technologist		
Diagnostic radiologic technologist (mammography)		
Supervisor/operator (e.g., dentists, physicians, chiropractors)		
Industrial radiographer (x-ray)		
Industrial radiographer (radioactive materials)		
Limited permit x-ray technicians		
Other:		
No personnel certification is required		

2. How are tests scheduled?

3. How are tests administered (e.g., semi-annually by your organization, outsourced to a testing center)?

4. Do you use interactive computer-based testing?  Yes  No

5. Are applicants required to provide school/training completion documentation as proof of qualification?  Yes  No

If yes, how is it submitted (i.e., electronically, hard copy submission)?

6. Do you require testing as part of certification renewal?  Yes  No  
If so, for what categories?

7. Do you require continuing education as part of certification renewal?  
 Yes  No

If yes, how do you collect and track evidence of continuing education credits?

***H. X-ray Machine and Materials Inspection***

1. On average, how many inspections are performed per inspector per month? (Please indicate whether numbers refer to facilities, machines, tubes, sites)

X-ray machines: \_\_\_\_\_ Material: \_\_\_\_\_

2. How often are inspections conducted? (Please complete the table below)

X-ray Machine Type	Frequency	Material Type	Frequency

3. What is your current inspection backlog? (Please indicate whether numbers refer to facilities, machines, tubes, sites)

X-ray machines: \_\_\_\_\_ Material: \_\_\_\_\_

4. Do you conduct scheduled or unannounced inspections?

X-ray machines: \_\_\_\_\_ Scheduled \_\_\_\_\_ Unannounced  
 Materials: \_\_\_\_\_ Scheduled \_\_\_\_\_ Unannounced

5. Who schedules inspections?

6. What triggers inspections (e.g., preset cycle, emergency, etc.)?

7. Do you prioritize inspections? \_\_\_\_\_ Yes \_\_\_\_\_ No If yes, please attach your priority scale.

8. Do you charge a separate fee for inspections? (Respond Y [yes] N [no])

X-ray machines: \_\_\_\_\_ Material: \_\_\_\_\_

9. What tools and/or device do inspectors use to capture inspection data (i.e., lap top computer, hand held device, paper form, etc.)?

10. Do inspection results and findings and/or Notices of Violation require supervisory review prior to release to the facility? \_\_\_\_\_ Yes \_\_\_\_\_ No

11. Do you keep track of inspection-related performance measures such as travel time, on-site time, etc. ? \_\_\_\_\_ Yes \_\_\_\_\_ No If yes, how?

### ***I. Radioactive Materials Licensing***

1. What is the total number of specific licenses issued by your organization?

_____	Broadscope	_____	Academic
_____	Medical	_____	Industrial
_____	Other: _____	_____	Other: _____



6. Is a supervisory review required in order to issue the following licenses?

(Please respond Yes or No)

- |   |  |
|---|--|
| <input type="checkbox"/> Gauge (moisture density)             | <input type="checkbox"/> Gauge (fixed)               |
| <input type="checkbox"/> Small lab (less than 1 mCi)          | <input type="checkbox"/> X-ray fluorescent analyzers |
| <input type="checkbox"/> Gas chromatographs                   | <input type="checkbox"/> Other: _____                |
| <input type="checkbox"/> All specific licenses require review |  |

7. How many radioactive material license amendments do you process annually? \_\_\_\_\_

8. Are amendments required for the following?

- |  |   |
|--|---|
| <input type="checkbox"/> Change of possession limit  | <input type="checkbox"/> Personnel change |
| <input type="checkbox"/> Non-safety procedure change | <input type="checkbox"/> Other: _____     |

For non-safety procedure changes, please provide two examples.

- a.
- b.

9. Do you require amendments to be submitted using a standard format?

Yes  No If yes, please include a copy of the template.

***J. Radiological Assessment/Environmental Monitoring (RA/EM)***

1. What activities does your RA/EM unit conduct? (Check all that apply)

- |   |  |
|---|--|
| <input type="checkbox"/> Environmental sampling (surface wipes, water, air, soil, etc.) | <input type="checkbox"/> Termination surveys for licensees/registrants |
| <input type="checkbox"/> Environ. radiation monitoring                                  | <input type="checkbox"/> Emergency response                            |
| <input type="checkbox"/> Confirmatory surveys for D&D                                   | <input type="checkbox"/> Instrument calibration                        |
| <input type="checkbox"/> Laboratory analysis  | <input type="checkbox"/> Instrument repair                             |
| <input type="checkbox"/> Off-site monitoring  | <input type="checkbox"/> NESHAP sampling                               |
| <input type="checkbox"/> <input type="checkbox"/> Nuclear power plants                  | <input type="checkbox"/> <input type="checkbox"/> State                |
| <input type="checkbox"/> <input type="checkbox"/> Dept. of Energy                       | <input type="checkbox"/> <input type="checkbox"/> Federal              |
| <input type="checkbox"/> <input type="checkbox"/> Dept. of Defense                      |  |
| <input type="checkbox"/> D&D plan review and evaluation                                 | <input type="checkbox"/> Incident investigation                        |
| <input type="checkbox"/> Public meetings  | <input type="checkbox"/> Response to public inquiries                  |
| <input type="checkbox"/> <input type="checkbox"/> Provide information                   | <input type="checkbox"/> Human health risk assessment                  |
| <input type="checkbox"/> <input type="checkbox"/> Participate                           | <input type="checkbox"/> Other: _____                                  |

2. Organizationally, where does this program lie (e.g., within materials licensing, as a stand-alone unit, in another state organization entirely, etc.)?
  
3. If RA/EM does not lie within your organization, please provide a contact name and number.
  
4. If RA/EM lies within your organization, how are these activities funded? If applicable, how is DOE off-site monitoring funded?
  
5. How are RA/EM data captured and maintained (information system, paper files, etc.)?
  
6. If an information system is used, what is the name of the application and vendor?
  
7. Do you have a standardized survey/sampling procedure manual?  Yes  No  
If yes, please provide a copy.
  
8. Do you have standard review procedures for D&D plans?  Yes  No  
If yes, please provide a copy.