



## An Overview of Oregon OSHA and The Portland Water Bureau's Agreement for the Safe Work Practices for Asbestos-Cement Pipe

Eric Fullan  
Safety Manager  
Portland Water Bureau



## OR-OSHA Asbestos Standard

- Class I – Most hazardous asbestos work
- Class II – Removal of intact asbestos such as roofing, panels, ceiling/floor tiles
- Class III – Repair or maintenance work where asbestos is distributed
- Class IV – Maintenance and custodial work not disturbing ACM

All Require Annual Refresher



## What's the problem with A.C. Pipe?

- 80–85% Portland Cement
- 15–20% long/medium Chrysolite Asbestos
- Many manufacturers used various formulas
- Raw materials and manufacturing varied
- Age and determination of pipe
- Difficulty in locating



## What's the problem with A.C. Pipe?

- Working with A.C Pipe can liberate asbestos fibers and silica dust
- Causing
  - Silicosis
  - Lung cancer
  - Mesothelioma
  - Gastrointestinal Cancer



## Common Terms

- Asbestos Containing Materials (ACM) 1%
- Presume Asbestos Containing materials (PACM)
- Permissible Exposure Levels (PEL) no asbestos in excess of 0.1 f/cc 8hr TWA
- Threshold Limit Value or Short Term Exposure Levels (TLV-STEEL)



## Workers Need To Know:

- Ways to recognize asbestos, health effects of exposure, relationship to smoking, and asbestos causing cancer
- Potential asbestos exposures, control methods, limitations and use of respirators
- Work practices, medical programs requirements, and OSHA's Asbestos standard
- Names and address and phone numbers of smoking cessation programs
- Required signage



## Exposure Monitoring

- Must be conducted by an CIH
- Exposure assessment
- Negative Exposure Assessment
- Medical Surveillance
- Recordkeeping
- AWWA Negative Exposure Assessments



## Regulated Areas

- Marked areas where employees are working with ACM
- Restricted entry (Zones)
- Post warning signs
- Respiratory Protection (when req'd) and appropriate PPE
- Employees must not eat, drink, smoke, chew or apply cosmetics in regulated areas





## OR-OSHA/Portland Water Bureau LOA

- Meets and follows the OSHA Standard
- Identify a Competent Person
- Accepted historical exposure data
- Established acceptable work practice
- Training
- Equipment
- PPE and does not require respiratory protection
- Controlled access zones
- Decontamination and disposal
- Documentation



## Letter of Agreement (LOA)

- Between the Portland Water Bureau and OR-OSHA
- Waiver and acceptance
- Your utility must establish your own waiver
- Same scope of work
- Deviations from the LOA – voids the LOA



## Competent Person

- “An employee who is capable of identifying existing and predictable hazards in the surroundings or work conditions that are unsanitary, hazardous, or dangerous to employees, and who has the authorization to take prompt corrective actions to eliminate them”



## Competent Person (CP)

- Employer must name a CP who is qualified and authorized to ensure worker safety and health, procedures are followed, and if conditions change (conditions beyond the scope of the LOA)– stop the job
- Must be trained



## A.C. Pipe Work Procedures

- Pre-Plan and site security
  - Restricted areas and barriers
  - Authorized Entrants
  - Entry and Exit procedures
- Job-site prep and checklist



## A.C. Pipe Work Procedures

- Proper Tools
  - Roll or Snap cutters
  - Wet Tapping
  - Bristle brushes
  - Cold chisel and hammer
- Wet Methods – all ACM must be kept wet during removal and disposal



## A.C. Pipe Work Procedures

- Other materials
  - Duct tape
  - Waterless hand cleaner
  - Barrier tape and warning signs
  - Laminated copy of SOP
  - Towels
  - Yellow disposal bags / White disposal bags



## A.C. Pipe Work Procedures

- PPE
  - Rubber gloves
  - Rubber boots
  - Safety glasses
  - Tyvek coveralls w/ duct taped cuffs
  - Respirators (Not required in LOA)
  - Hard hat





## Respiratory Requirements

- Eliminate the need (wet methods)
- ID respiratory hazards
  - Voluntary use
  - Appoint and administer
  - Select appropriate respirators
  - Medical evaluations and surveillance
  - Written program and training



## A.C. Pipe Work Procedures

- Execute the work
  - Conduct the work as planned
- Clean-up and disposal
  - Decontamination
  - Double bag materials
  - Transport all bagged materials to designated asbestos disposal collect facility
- Recordkeeping
  - Checklist back to Safety Office
- Post-job debrief



## Other related Safety Items

- WZTC
- Excavation Safety
- PPE
- Confined Space
- Hazard Communication



## Conclusion

- ACM could pose health hazard to anyone working on or near it
- AWWA Historical data shows that following established best practices, hazardous exposures will be minimized or eliminated
- The LOA between the PWB and OR-OSHA definitively outlines those best practices



## Contact Information

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# WRITING SOPs FOR SAFETY AND OTHER TASKS IN THE UTILITY INDUSTRY

## *Part 1 – Method and Process*

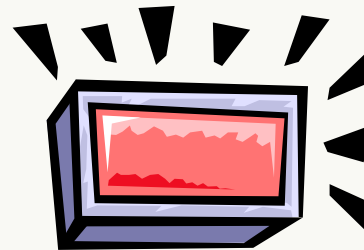
May 2012



# Housekeeping



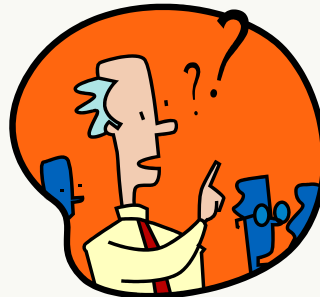
- ◆ Panic Procedure!



- ◆ Copies of presentation will be available



- ◆ Questions



# Meet the Presenter



*Len Cornwell, B.S., A.S., MBA*

*Planning Engineer Assistant*

**Safety – Emergency Planning – Security**

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1510 228th AVE SE

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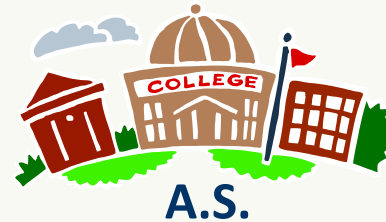
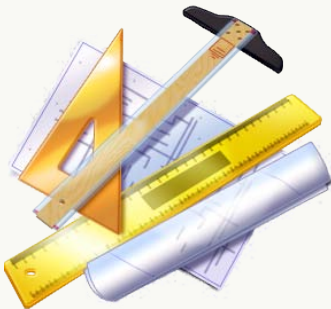
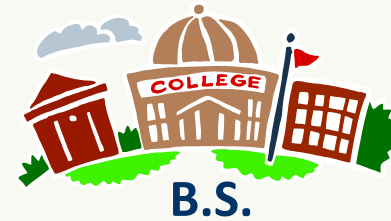
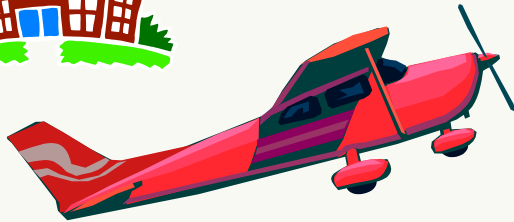
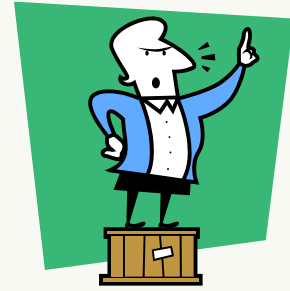
(425) 391-5389 (FAX)

[len.cornwell@sammplat.wa.org](mailto:len.cornwell@sammplat.wa.org) " KD7VF "

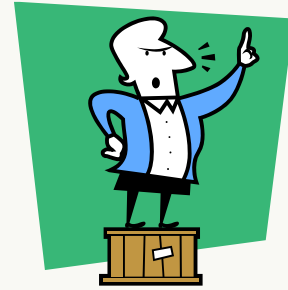




# Meet the Presenter



# Meet the Presenter



# Presentation Outline

- ◆ The Journey
- ◆ Process Concepts & Characteristics
- ◆ SOPs – What They Are and Why We Need Them
- ◆ SOPs – Getting Ready to Write
- ◆ SOPs – Getting it Organized
- ◆ SOPs – The Content
- ◆ SOPs – Control and Management
- ◆ Wrap Up – What's in Part 2
- ◆ Just For Fun





# THE JOURNEY



# From There to Here

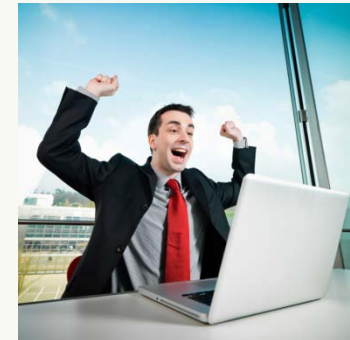
- ◆ S.O.R.T.



- ◆ On-line Research

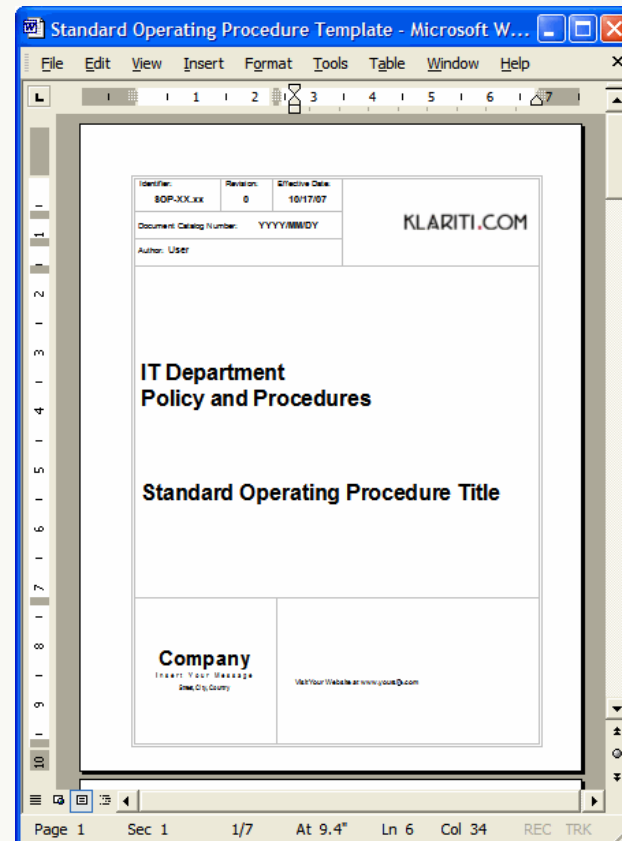
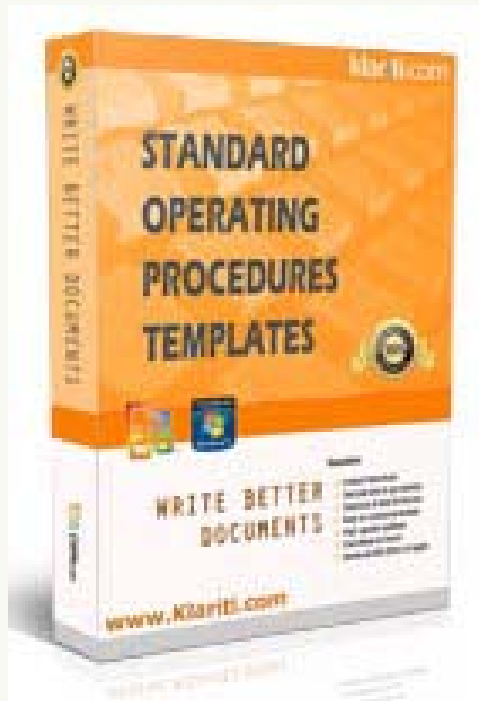


- ◆ Source Found – [Klarity.com](http://Klarity.com)









# Klarity Rocks!

## ◆ The Klarity Tool



# The Sales Pitch

## ◆ The Klarity Tool (Just \$9.99)

|  |          |   |
|--|----------|---|
| SOP Template (Detailed)                | 7 pages  |    |
| SOP Single Template                    | 1 pages  |    |
| SOP Guidebook                          | 11 pages |    |
| Sample – RFP Pre-Issuance<br>Procedure | 7 pages  |   |
| SOP Log Book                           | 7 pages  |  |
| SOP Document Control                   | 3 pages  |  |





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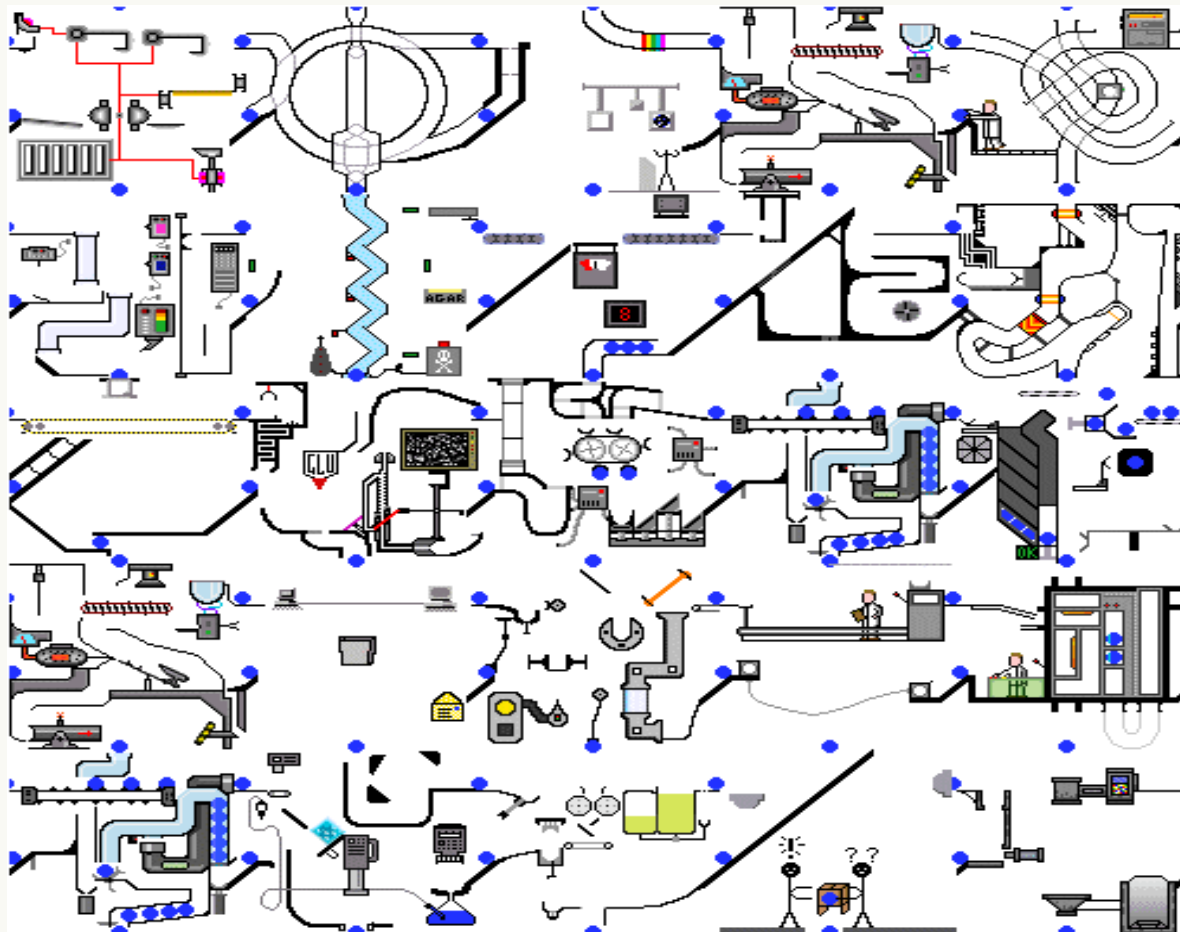
# **PROCESS CONCEPTS & CHARACTERISTICS**

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# Processes in an Organization



Writing SOPs for Safety and Other Tasks in the Utility Industry

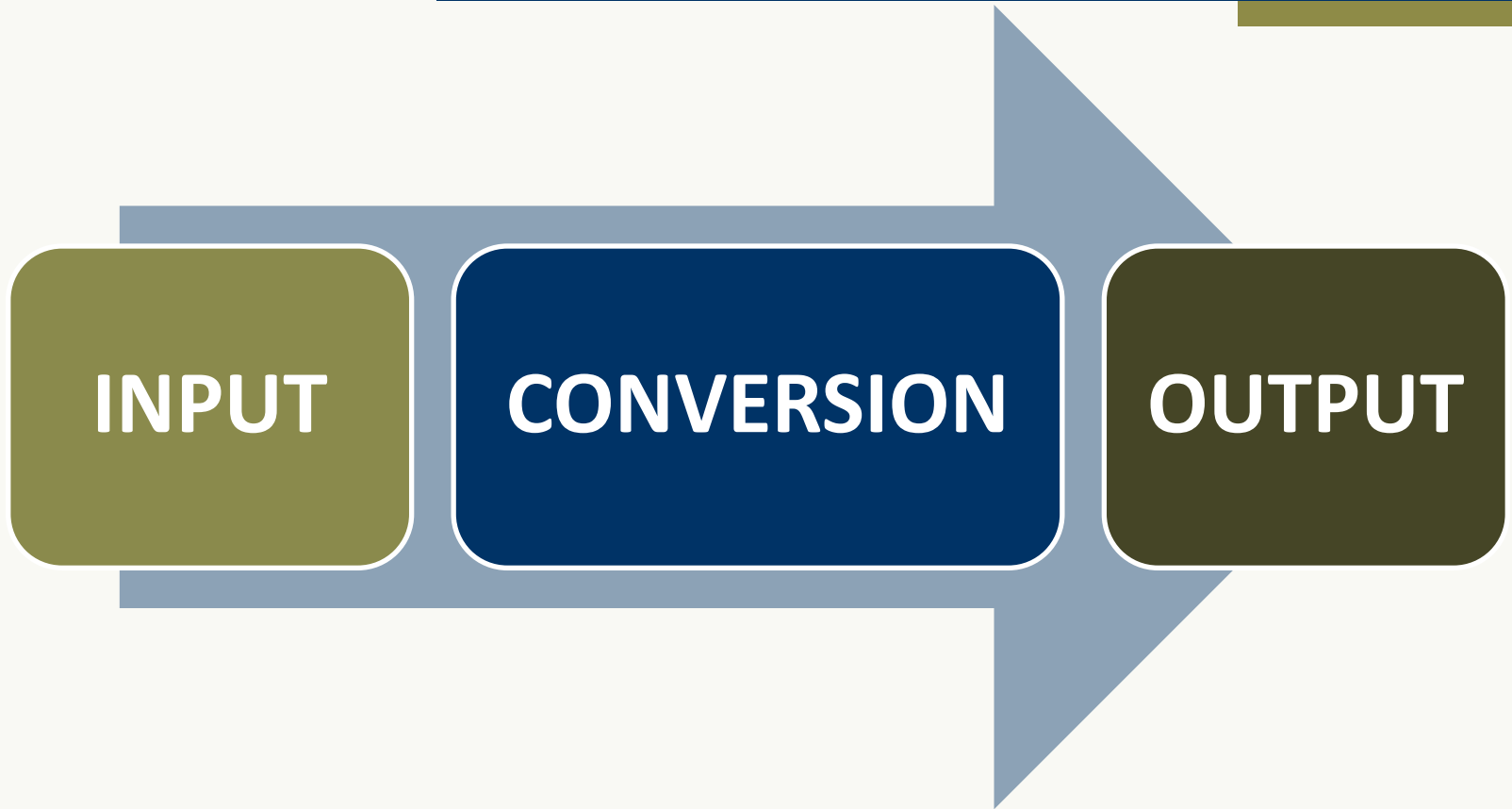


# Process Defined

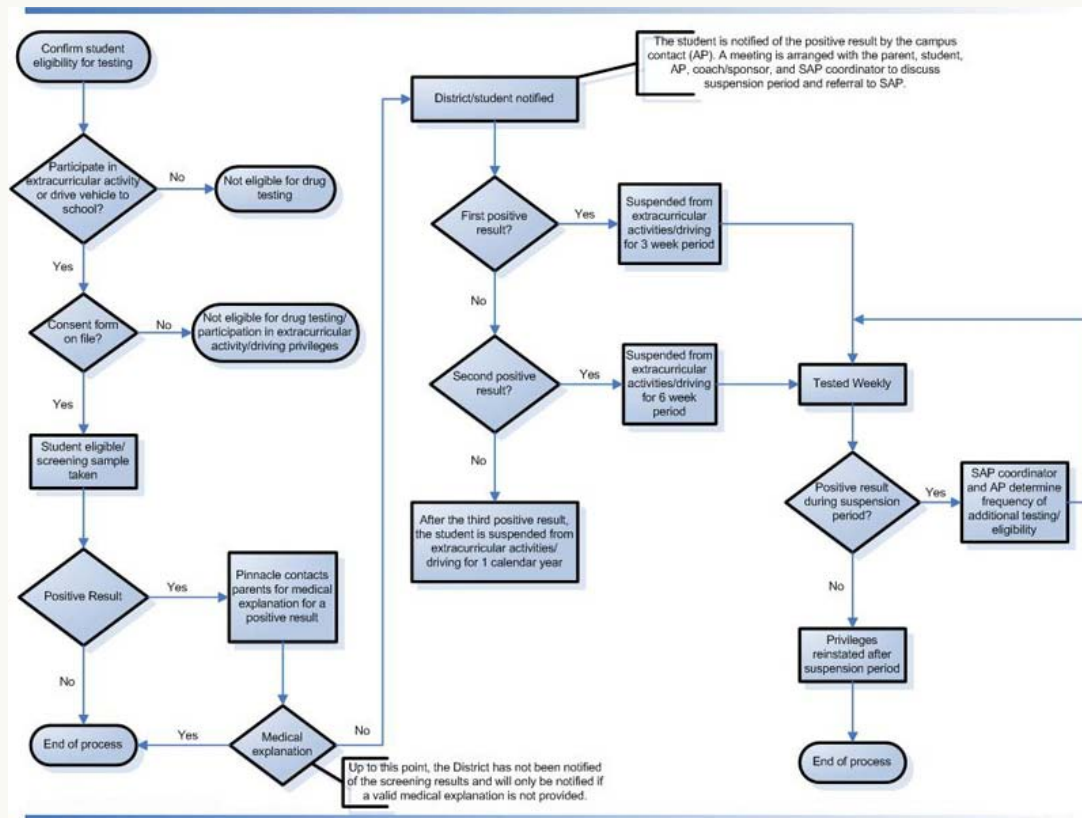
- ◆ A sequence of interdependent and linked procedures which, at every stage, **consume** one or more **resources** (employee time, energy, machines, money) to **convert inputs** (data, material, parts, etc.) **into outputs**. These outputs then serve as inputs for the next stage until a known goal or end result is reached.



# Basic Process Elements



# A Sample Process



# Processes Have Boundaries

- ◆ The work process boundaries are where the process begins and ends.
  - The beginning of a process starts with a trigger that causes a specific action to be taken by a person, another process, or work group.
  - The ending occurs when the results get passed on to another person, process, or work group.

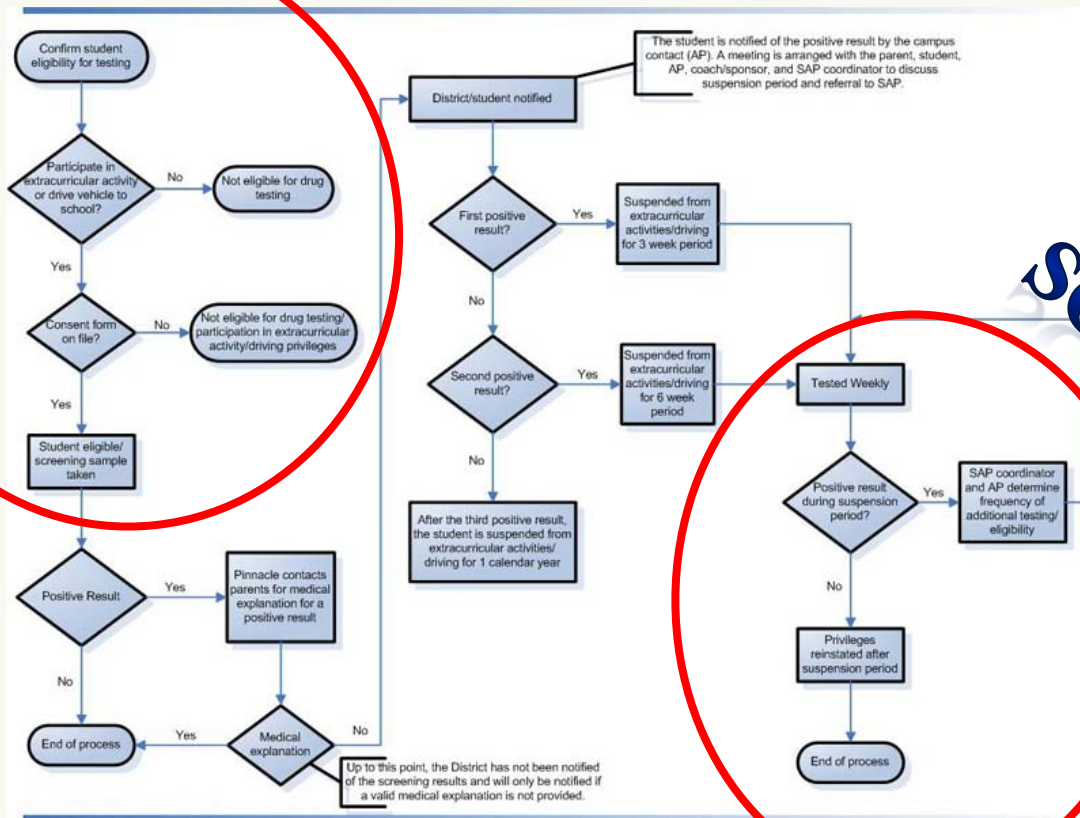
**Process BOUNDARY ≈ Process SCOPE**



# A Sample Process Revisited

**BOUNDARY**

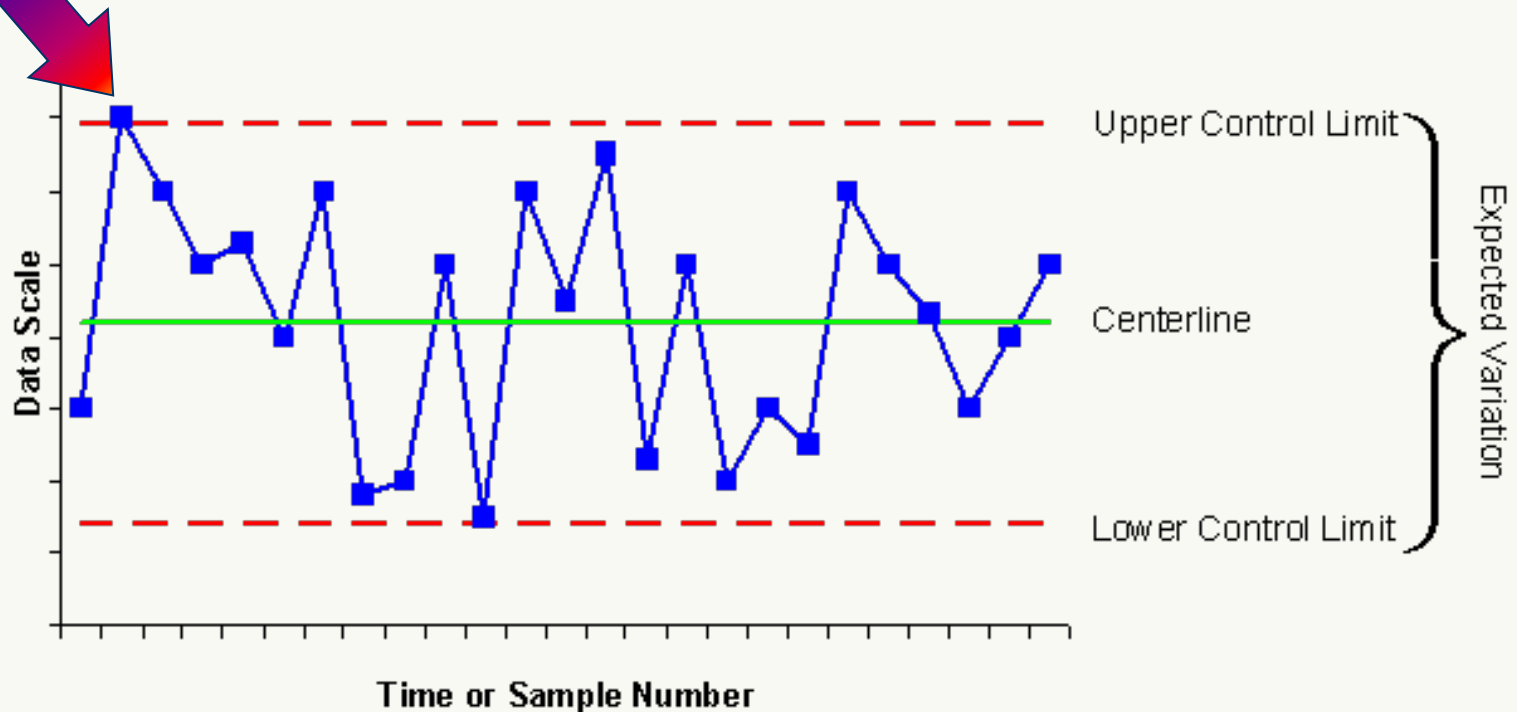
**SCOPE**



# A Key Process Characteristic

## ◆ In Control or Out of Control

Process Control Chart Elements



# 3 More Key Process Characteristics

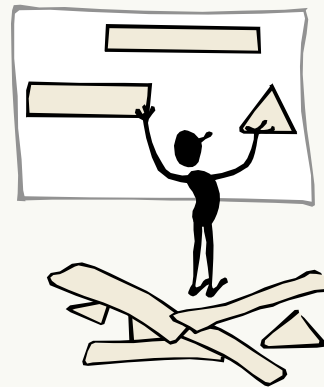
1. Effectiveness



2. Efficiency



3. Adaptability







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# **SOPs – What They Are and Why We Need Them**

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# What is an SOP? (Definition 1)

- ◆ An SOP is a set of instructions or steps someone follows to complete a job, with no adverse impact on the environment (and which meets regulatory compliance standards) or yourself (safety), and in a way that maximizes operational and production requirements.



# What is an SOP? (Definition 2)

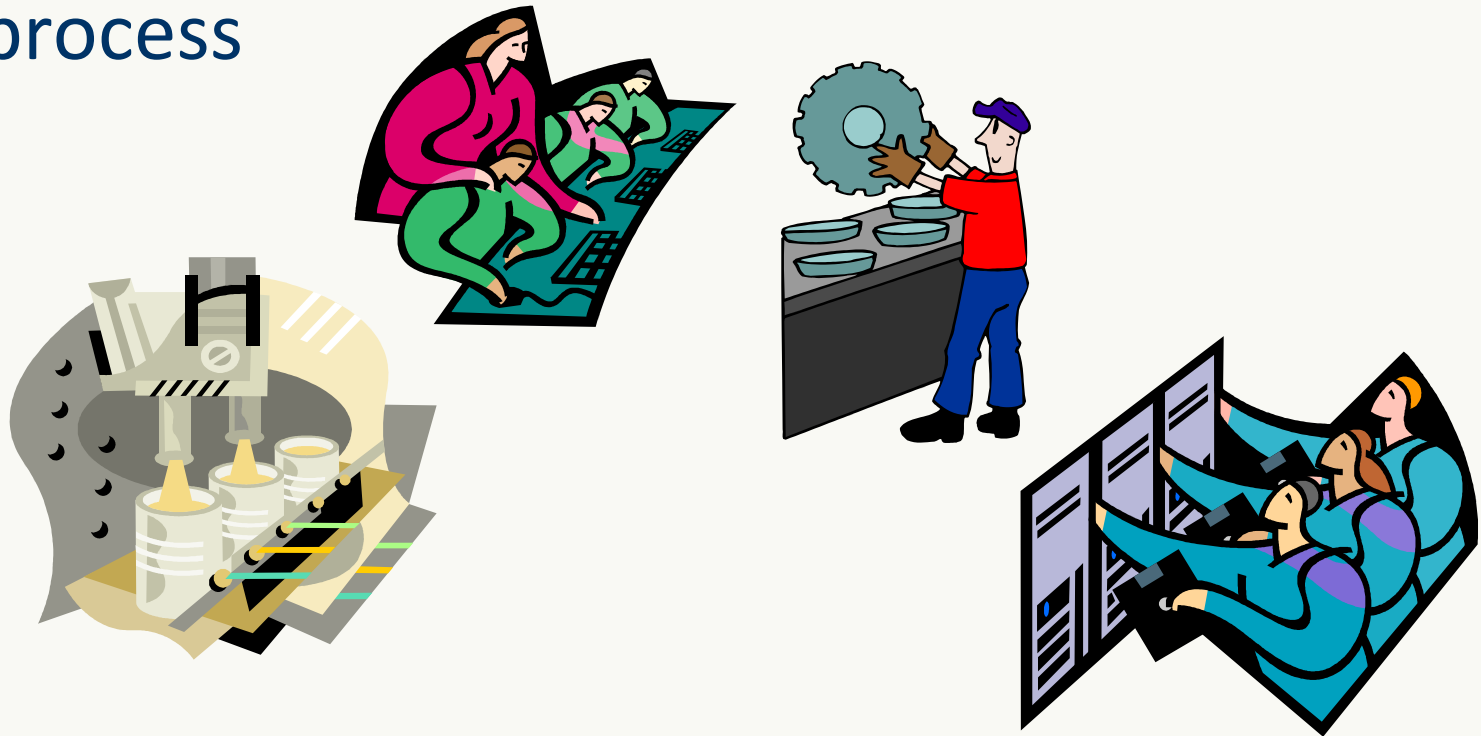
- ◆ SOPs detail the regularly recurring **work processes** that are to be conducted or followed within an organization.

They document the way activities are to be performed to facilitate consistent conformance to technical, quality, and safety requirements.



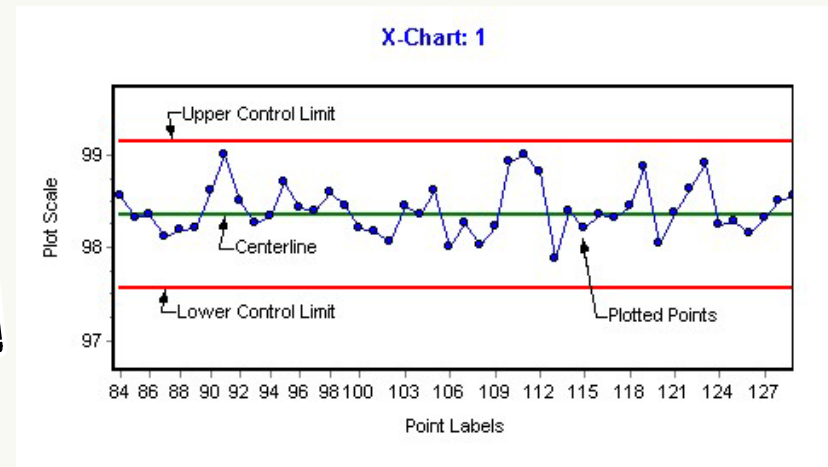
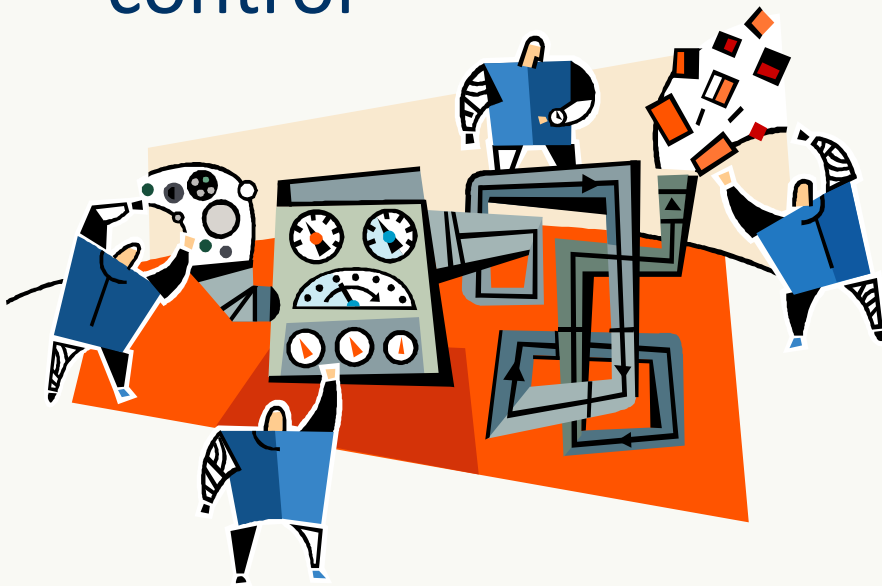
# Why We Need SOPs

- ◆ Most things we do can be thought of as a process



# Why We Need SOPs

- ◆ The process is either in control or out of control



# Why We Need SOPs

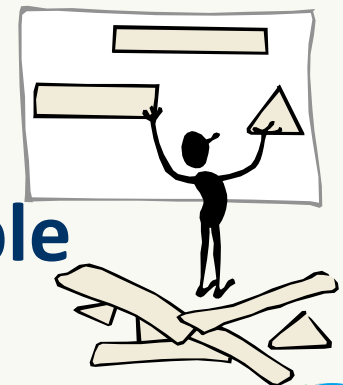
- ◆ To be certain the procedure is **Effective**



- ◆ To make sure the procedure is done **Efficiently** each time



- ◆ To assure the procedure is **Adaptable** to changing circumstances



# 10 More Reasons Why We Need SOPs

- ◆ Help relief workers do the job right
- ◆ Some jobs are dangerous
- ◆ Training is easier with SOPs than without
- ◆ People need direction in order to be happy
- ◆ Help people focus on specific activities that lead toward goal achievement
- ◆ Variation costs \$\$\$



# 10 More Reasons Why We Need SOPs

- ◆ You can't really make changes until you have control of the system
- ◆ Improves communication and teamwork among workers and management
- ◆ Previous work experience is variable
- ◆ Feedback is more effective when expectations are clear







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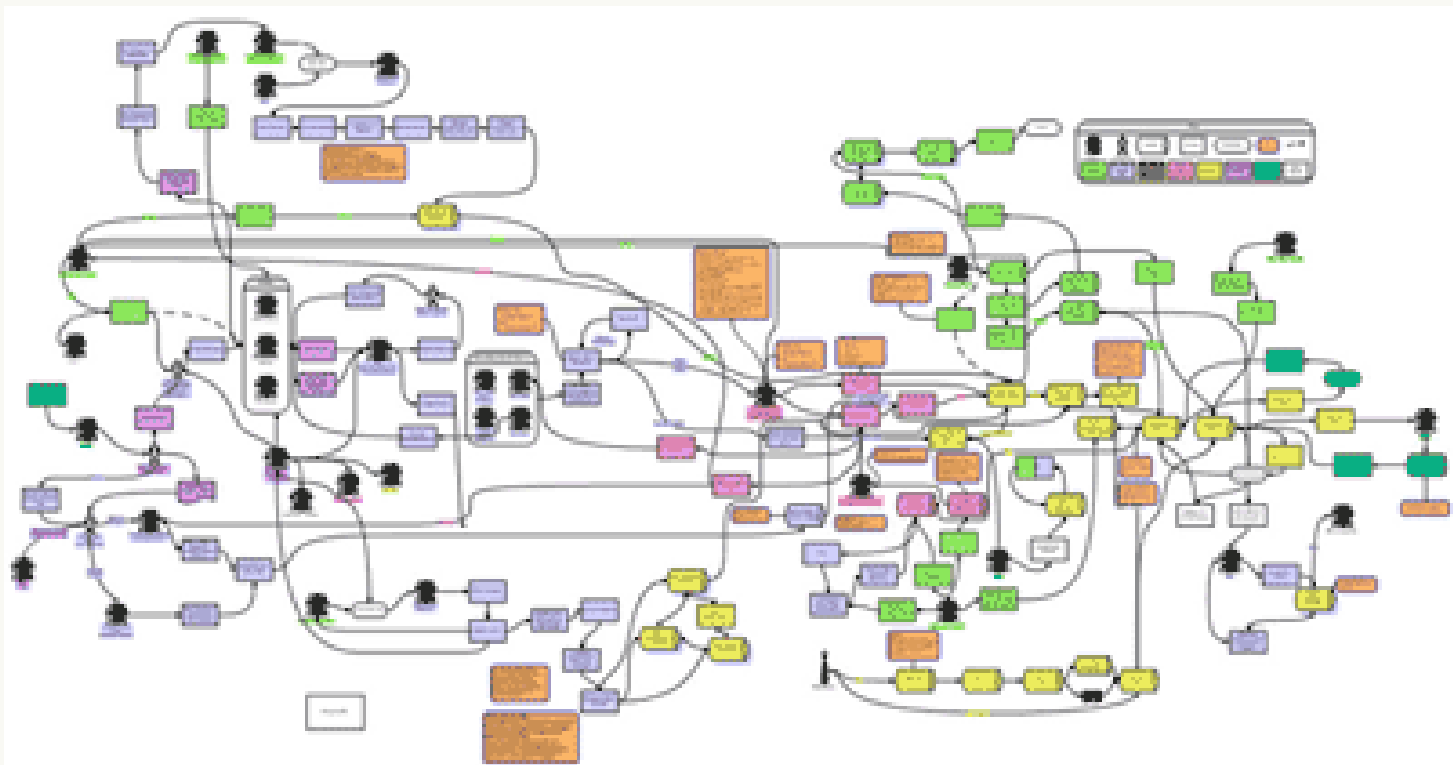
# SOPs – Getting Ready to Write

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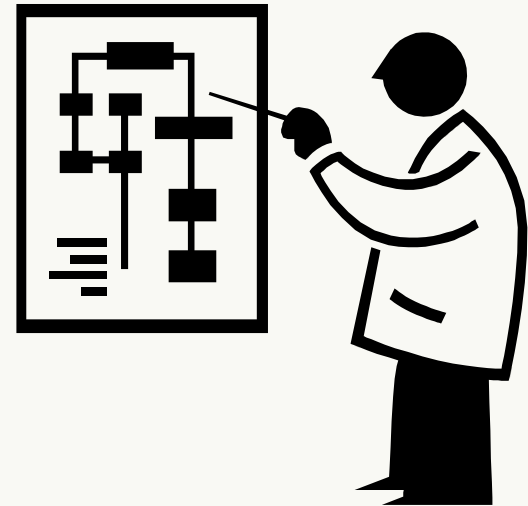
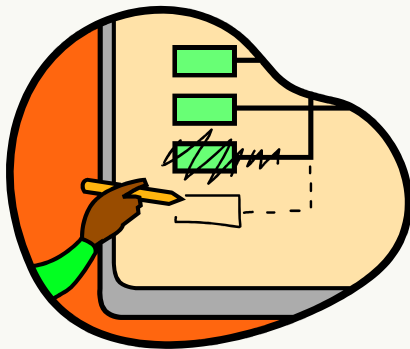
# First Things First - Turning on the Lights

- ◆ Understanding the Process



# First Things First - Turning on the Lights

- ◆ Graphical mapping of the process



# First Things First - Turning on the Lights













## ◆ Graphical Mapping Tools













- MS Office (\$199 - \$349)
- Visio (\$250 - \$1000)
- AutoCad (\$1200 - \$5000)
- **SmartDraw** (\$197 - \$497)



# The Other Sales Pitch



-  Accident Mapping
-  Calendars
-  Cause and Effect
-  Certificates
-  Charts and Graphs
-  Project Charts
-  Decision Tree
-  Engineering
-  Family Trees
-  Floor Plans
-  Floor Charts
-  Forms

-  Landscape Plans
-  Maps
-  Mind Maps
-  Network Diagrams
-  Org Charts
-  Presentations
-  Project Charts
-  Software Design
-  Strategic Plans
-  Time Lines
-  Venn Diagrams
-  Visual Process Management





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# SOPs – Getting it Organized

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# SOP Organization

- ◆ Once inside, you know what to expect!



What's The Common Theme?



# Consistent SOP Content

1. Header
2. Purpose
3. Scope
4. Prerequisites
5. Responsibilities
6. Precautions
7. Procedure
8. Training
9. References
10. Definitions

## The Klarity.com Model







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# **SOPs – The Content**


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***Header – Purpose – Scope – Prerequisites –  
Responsibilities – Precautions – Procedure –  
Training – References - Definitions***

# SOP Content

## ◆ Header

### STANDARD OPERATING PROCEDURE

|   |  |                             |                |                |
|---|--|-----------------------------|----------------|----------------|
|  | <b>Sammamish Plateau<br/>Water and Sewer District</b><br>1510 228th Avenue SE<br>Sammamish, Washington 98075 |                             | SOP #:         | <b>OPM.010</b> |
|   |  |                             | Revision #:    | 1.1.0          |
|   |  |                             | <b>Page #:</b> | <b>1 of 6</b>  |
| Implementation Date:  | 02-04-11   | Last Reviewed/ Update Date: | 02-04-11       |                |
| <b>SOP Author:</b>  | Len Cornwell, Safety Coordinator   |                             | Drafted:       | 02-04-11       |
| <b>SOP Sponsor:</b>   | Scott Jonas, Operations Manager  |                             | Approval:      | 02-04-11       |
| <b>Procedure Name: A-C Pipe Work</b>  |  |                             |                |                |



# SOP Content

## ◆ Purpose

- States the goals to be achieved by performing the procedure.
- May also describe the conditions that require the procedure to be performed.



# SOP Content - Example

## *1. Purpose*

This SOP establishes procedures for cutting and tapping Asbestos-Cement (A-C) pipe, using wet tapping machine methods at the District.



# SOP Content

- ◆ Scope
  - Identifies the intended audience and /or activities where the SOP may be relevant.
  - Clarifies what is “in the box” vs. what is not “in the box”.



# SOP Content - Example

## 2. *Scope*

This SOP covers cutting and tapping of Asbestos-Cement (A-C) pipe that is in a non-friable condition using a wet tapping machine.

Work with A-C pipe that has become potentially friable due to crushing or breakage is considered certified asbestos work and **is not** covered by this SOP.



# SOP Content

## ◆ Prerequisites

- Outlines actions that must be completed, or information and equipment that are required before proceeding with the listed procedure.
- Ensures all required permissions and notifications are obtained prior to starting the procedure.



# SOP Content - Example

## 3. Prerequisites

All personnel working in the work area of the A-C pipe work must have completed the State required initial 8-hour training and be current on their annual refresher training.

Equipment and materials required:

- Snap cutter, **or**
- Reed wheel cutter (carbide blade), **or**
- Docking (hand) saw, **or**
- Wet tapping machine of appropriate size, **or**
- Sprayer filled with water . . . .





# SOP Content - Example

## 3. *Prerequisites*

....

PPE required:

- Disposable, protective suit covering boots and all clothing
- Hard hat
- Rubber gloves
- Eye protection, as needed

All staff must be familiar with the District's *A-C Pipe Work Safety Program*.



# SOP Content

## ◆ Responsibilities

- Identifies the personnel that have a primary role in the SOP and describes how their responsibilities relate to this SOP.
- If necessary, includes contact information.



# SOP Content - Example

## 4. *Responsibilities*

**Competent Person** - Exercise supervisory oversight over all A-C pipe work, makes inspections of the job sites, materials, and tools. The inspections will be made at a frequency sufficient to satisfy the Competent Person that the procedures described . . .

**Field Technicians** - If, in the course of following this procedure, the A-C pipe becomes friable, work must immediately cease. The work area will be secured until the services of a certified asbestos worker or supervisor can be obtained.



# SOP Content

## ◆ Precautions

- Written precautions and limitations inform users of harmful conditions and their potential effects.
- If action is required by users to respond to the precaution or limitation, the appropriate location in the procedure is identified.



# SOP Content - Example

## 5. *Precautions*

A-C pipe work, using the wet methods described in this SOP, has been consistently shown to limit the workers exposure to asbestos fibers to a level significantly below the State established Permissible Exposure Limits (PEL).

Cutting or abrading A-C pipe, when it is dry, may expose the worker to asbestos fibers above the PEL. Always keep the A-C pipe and cutting tools saturated with water.



# SOP Content

## ◆ Procedure

- This is the core of the SOP. Provides the steps required to perform this procedure.
- Users may be working under stressful conditions, so write procedures that can be understood in one reading.
  - Use simple and concise language.
  - Use action statements to communicate instructions.
  - Maintain consistency in language.
  - Be specific. Avoid ambiguous words, e.g., “this might happen if you do this”.
  - Specify quantities where necessary.



# SOP Content - Example

## 6. Procedure

| AC PIPE WORK - CUTTING & TAPPING |  |
|----------------------------------|--|
| Step                             | Action   |
|                                  | The goal of this procedure is to assure that at all times during the A-C pipe tapping process, all worker exposure to asbestos fibers is below the PEL.  |
|                                  | <b>Excavation</b>  |
| 1.                               | Excavate around the A-C pipe a sufficient distance to assure tool clearance in the area to be cut. Care must be taken to avoid any abrasion to the pipe.   |
| 2.                               | Make sure all equipment needed for this operation, including a sufficient quantity of water for the equipment's reservoir (hydraulic hole saw) and the sprayer is accessible in the trench before work begins. |
| 3.                               | Take notes on the pipe condition and soil type and condition for later use with the A-C Pipe Work Record form.   |
|                                  | <b>PPE</b>   |



# SOP Content - Example

## 6. Procedure

|     |  |
|-----|--|
|     | <b>Pipe Preparation</b>  |
| 5.  | Clean and wash the surface of the pipe in the area to be cut and attach the cutting equipment.                 |
|     | <b>Cutting/Tapping Operation</b>   |
| 6.  | Begin applying water to the area being cut and continue until cutting is complete.                             |
| 6.1 | A person outside the trench may apply water, if that is feasible.  |
| 7.  | Cut/Tap the pipe as directed by equipment manufacturer's instructions.   |
| 7.1 | The area must be continually wetted to ensure no A-C dust is created.  |
| 8.  | Detach Cutting/Tapping equipment. If a second tap is necessary, repeat the above steps at the second location. |
|     | <b>Waste Removal &lt; 1-foot Dimension</b>   |
| 9.  | Remove any piece(s) of pipe (biscuits). Place to one side, out of the operations area, in the trench.          |





# SOP Content

## ◆ Training

- Describes who is responsible for ensuring that employees who follow this procedure understand the SOP's objectives and other inter-related activities.
- Describes the key elements of the training, or where the training outline can be located.



# SOP Content - Example

## 7. *Training*

The 8-hour, State required and approved, A-C pipe work training course will be provided by the Washington Environmental Training Center in Auburn, Washington.

After completion of the approved 8-hour course, each employee must receive an annual 2-hour minimum refresher course. District personnel will present this recurring training to the staff. The training outline for this annual refresher course may be found in the Safety Training Outlines portion of the District's Accident Prevention Program.



# SOP Content

- ◆ References
  - Lists resources that may be useful when performing the procedure; for example, government standards and other SOPs.



# SOP Content

- ◆ Definitions
  - Identifies and defines frequently used terms.
  - Provides additional and/or relevant information needed to understand the SOP



# SOP Content - Example

## 8. *References*

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- SPWSD A-C Pipe Work Safety Program

## 9. *Definitions*

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**Work area:** The zone within the confines of a trench that has exposed A-C pipe present.





# **SOPs – CONTROL AND MANAGEMENT**



# SOP Control and Management

MASTER - SOP DOCUMENT CONTROL

| SOP #   | Issue Date | SOP Title   | Associated Department    | SOP Sponsor  | Author       | Status         | Status Date | Version | Due Date - Next Review |
|---------|------------|---|--------------------------|--------------|--------------|----------------|-------------|---------|------------------------|
| ADM.001 | 05/14/08   | SOP Management  | Administration           | Ron Little   | Len Cornwell | Approved       | 04/07/09    | 1.0.0   | 01/00/00               |
| ADM.002 | 05/14/08   | Writing SOP's   | Administration           | Ron Little   | Len Cornwell | Approved       | 04/07/09    | 1.0.0   | 01/00/00               |
| ADM.003 | 06/27/08   | Electronically Archiving Water and Sewer Certificates   | Administration           | Ron Little   | Sue Tucker   | Draft          | 01/00/00    | 0.0.0   | 01/00/00               |
| ADM.004 | 01/00/00   | SARA Title III Tier Two Annual Reports  | Administration           | Jay Krauss   | Len Cornwell | Draft          | 03/30/12    | 0.0.0   | 01/00/00               |
| ADM.005 |            | Reporting of Chemical Storage Under SARA Title III (Emergency Planning and Community Right-To-Know Act) | Administration           | Jay Krauss   | Len Cornwell | Draft          | 03/30/12    |         |                        |
| ENG.001 | 03/01/09   | Side Sewer Inspections  | Operations & Maintenance | 0            | 0            | 0              | 01/00/00    | 0       | 01/00/00               |
| FIN.001 | 09/17/10   | Payroll Processing  | Finance                  | Angel Barton | Jay/Angel    | In Development | 09/17/10    | 0.0.0   | 10/01/10               |
| HRD.001 | 01/00/00   | Annual Hearing Testing  | Human Resources          | Shelley Fyfe | Len Cornwell | In Process     | 04/03/09    | 0.0.0   | 01/00/00               |
| HRD.002 | 04/10/09   | Staff NIMS Training   | Human Resources          | Shelley Fyfe | Len Cornwell | In Process     | 01/00/00    | 0       | 01/00/00               |
| HRD.003 | 04/11/09   | Staff First Aid - CPR-AED Training  | Human Resources          | Shelley Fyfe | Len Cornwell | In Process     | 01/00/00    | 0       | 01/00/00               |
| HRD.004 | 01/00/00   | Post Accident Substance Testing   | Human Resources          | Shelley Fyfe | Len Cornwell | In Process     | 03/06/12    | 0.0.0   | 01/00/00               |
| HRD.005 | 01/00/00   | Post Injury Transport for Medical Care  | Human Resources          | Shelley Fyfe | Len Cornwell | In Process     | 03/06/12    | 0.0.0   | 01/00/00               |
| OPM.001 | 03/14/08   | Fall Protection Equipment Inspection  | Operations & Maintenance | Scott Jonas  | Len Cornwell | Draft          | 03/14/08    | 0.0.0   | 01/00/00               |
| OPM.002 | 03/18/08   | Fall Protection Equipment Storage and Maintenance   | Operations & Maintenance | Scott Jonas  | Len Cornwell | Draft          | 03/18/08    | 0.0.0   | 01/00/00               |
| OPM.003 | 05/15/08   | Office Floor Maintenance  | Operations & Maintenance | Scott Jonas  | Scott Jonas  | Draft          | 05/15/08    | 0.0.0   | 01/00/00               |



# Wrap-up

- ◆ Next . . . ***Part 2 – Application of Method and Process***
  - ***The Nitty-Gritty of Writing SOPs***
    - Details, Details, Details . . . Style and Language . . .  
Writing Conventions . . . Numerical Information . . .  
Component Information . . . Procedure Titles . . . Action  
Step Numbering
  - ***The Biggie – Writing the Action Steps***
    - Sequential vs. Conditional Steps





## - - Just For Fun - -

Two blondes are walking down the street. One notices a compact on the sidewalk and leans down to pick it up. She opens it, looks in the mirror and says, "Hmm, this person looks familiar."

The second blonde says, "Here, let me see!" So, the first blonde hands her the compact.

The second blonde looks in the mirror and says, "You dummy, it's me!"



# That's All, Folks



# WRITING SOPs FOR SAFETY AND OTHER TASKS IN THE UTILITY INDUSTRY

## *Part 2 – Application of Method and Process*

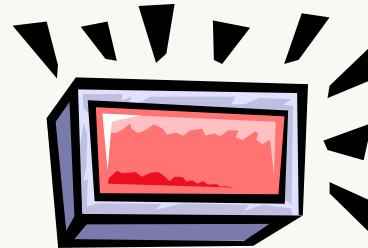
May 2012



# Housekeeping



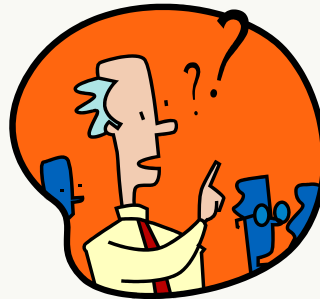
- ◆ Panic Procedure!



- ◆ Copies of presentation will be available



- ◆ Questions



# Meet the Presenter



*Len Cornwell, B.S., A.S., MBA*

*Planning Engineer Assistant*

**Safety – Emergency Planning – Security**

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[len.cornwell@sammplat.wa.org](mailto:len.cornwell@sammplat.wa.org) " KD7VF "



# Presentation Outline

- ◆ Part 1 Recap
- ◆ Policy vs. Procedure
- ◆ The Nitty-Gritty of Writing SOPs
- ◆ The Biggie – Writing the Action Steps
- ◆ Making Corn Bread!
- ◆ Just For Fun





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# PART 1 RECAP

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# Background to Part 2

- ◆ Processes and their characteristics
  - Input – Conversion – Output
  - Boundaries
  - Control / Out of Control
  - Effective – Efficient – Adaptable
- ◆ Defined SOPs
  - The way activities are to be performed





# Background to Part 2

- ◆ Understanding the process through graphical mapping
- ◆ Consistent SOP content/format
- ◆ SOP content elements reviewed
  - ◆ Header – Purpose – Scope – Prerequisites – Responsibilities – Precautions – Procedure – Training – References – Definitions
- ◆ SOP Control and Management





# **POLICY vs. PROCEDURE**



# Policy vs. Procedure

- ◆ The WHAT – Business policies are the guidelines developed by an organization to govern its actions. They define the limits within which decisions must be made.
- ◆ The HOW – Procedures document the way activities are to be performed to facilitate consistent conformance to technical, quality, and safety requirements.



# Policy vs. Procedure

- ◆ Don't confuse the two
- ◆ Don't mix them together





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# **THE NITTY-GRITTY OF WRITING SOPs**

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# Details, Details, Details ...

- ◆ Not Enough
  - User can't perform the tasks correctly
  - Variable outcomes
- ◆ Too Much
  - Document seems dense – nobody wants to use it



# Details, Details, Details . . .

## ◆ Consider:

- User's qualifications and training
- Task complexity
- Task frequency
- Safety issues
- Regulatory requirements
- Will variation in how the step is completed affect the task effectiveness or efficiency?

## Caution:

- Detail not a substitute for training



# Details, Details, Details . . .

- ◆ Measures of adequacy:
  - Can SOP be performed in sequence as written?
  - Can user identify equipment referred to in the SOP?
  - Can user explain how to perform the procedure?
  - Does user need additional information from persons or procedures not specified in the SOP?





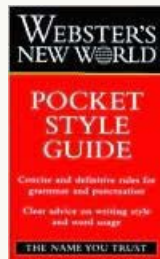
# Style and Language

- ◆ Aim for SOP being understood in one reading
  - Simple and concise language
  - Use action statements to communicate instructions
  - Use language consistently
  - Be specific – Avoid ambiguous words like “might” or “may”
  - Specify quantities where necessary



# Style and Language

- ◆ Best Advice – Invest in a style handbook!
  - \$5 to \$25
- ◆ Google “style handbook” or “style manual”
- ◆ Barnes and Noble search for “writing style handbook” – 805 entries!



# Writing Conventions

- ◆ Use “will” and “should” correctly
  - Use “**will**” to imply mandatory compliance
  - Use “**should**” as a recommendation or guideline
- ◆ Consider putting “**will**” statements in bold to make them easy to locate and interpret with respect to the main topic



# Numbers – Spelled Out



1. Two general rules apply (be consistent within a document)
  - Spell out numbers through nine; use figures from 10 on
  - Spell out numbers through ninety-nine; use figures from 100 on
2. Any number that begins a sentence
  - Consider reforming a sentence



# Numbers – Spelled Out



3. Centuries, round numbers, and indefinite expressions

*the early seventies, but the 1890's, mid-1964*

4. Large numbers in very formal writing

5. Fractions followed by of a or of an

6. Ordinal numbers less than one hundred

*twentieth century, eighty-second congress,  
Fifth Fleet*



# Numbers – Expressed in Figures



1. Numbers over 100 in ordinary text
2. All numbers in tabular form
3. Measurements of physical properties; any number used with a symbol or abbreviated unit of measure
4. Serial numbers; numbers designating pages or other parts of a book



# Numbers – Expressed in Figures



5. Years
6. Fractions that would be awkward if spelled out  
*8 ½-by 11-inch band*
7. Decimal fractions and percentages



# Numbers – Expressed in Figures



8. All numbers referring to the same category in a single passage if the largest is over one hundred

*Of the 187 delegates at the twelve o'clock meeting, only 9 opposed the plan.*





# Component Information

- ◆ Refer to components using both the equipment name and number  
*IBM eServer 2100*
- ◆ Avoid ambiguous descriptors  
*the server may run slowly*
- ◆ Specify numbers and units of measurements as presented on instrument display panels



# Procedure Titles

- ◆ Write concise procedure titles that describe the activity
- ◆ Write unique procedure titles to assist the user in identifying the correct procedure



# Action Step Numbering

- ◆ Action steps identify individual steps and their sequence
- ◆ Make the action steps distinguishable to the reader
- ◆ Limit the number of action steps to two or possibly three

|       |         |
|-------|---------|
| 1     | Aaaaaaa |
| 1.1   | Bbbbbb  |
| 1.2   | Ccccc   |
| 1.2.1 | Ddddd   |
| 1.2.2 | Eeeee   |





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# **THE BIGGIE – WRITING THE ACTION STEPS**

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# Action Steps

- ◆ A command to perform a specific action
- ◆ Tells user what needs to be done
- ◆ May include additional information to clarify the instructions
  - Cautions
  - Pre-requisites
  - Conditions



# Sequential Steps

- ◆ Use present tense action verbs
  - Start, Print, Open, etc.
- ◆ Describe object of the verb
- ◆ Unique identifier for each step and sub-step
  - Distinguishes each action step
- ◆ Use sequential numbers – do not repeat a number

1

2

3

4



# Sequential Steps

- ◆ Highlight important information
  - **Bold**, *italics*, or underlining
- ◆ Avoid using ALL CAPITAL LETTERS, or Capitalizing the First Letter of any Word unless they are formal, proper names

1

2

3

4



# Sequential Steps

- ◆ Use articles (a, an, & the) when referring to general items

*Close the IBM Server*

1

2

- ◆ Omit the article when referring to specific items

*Close server xyz*

3

4





# Sequential Steps

- ◆ Use sub-steps for specific details or explanatory information
- ◆ Use Arabic numbers rather than Roman numerals

1

2

3

4



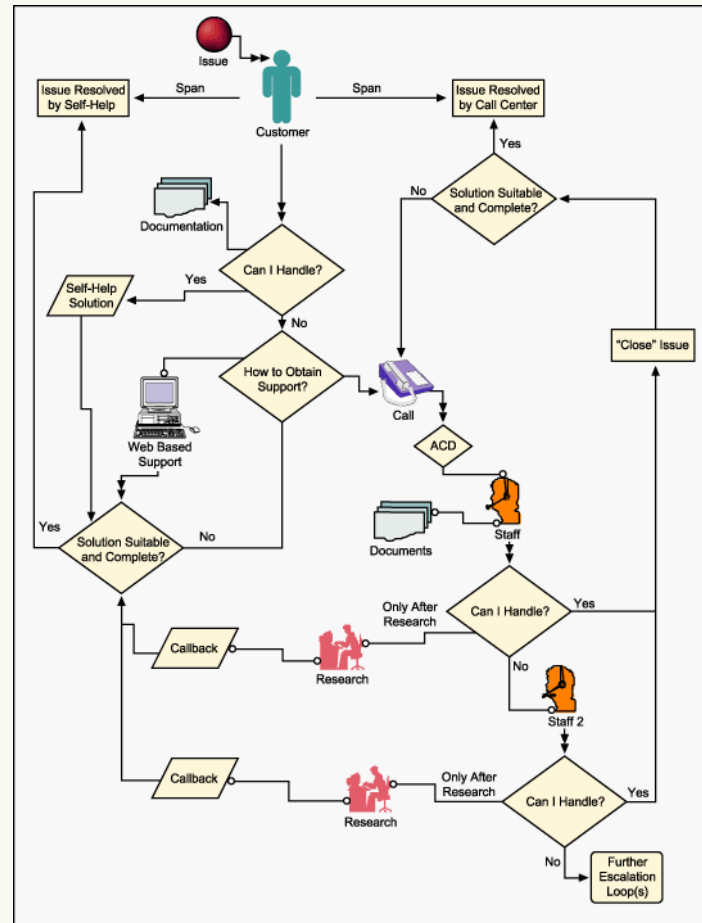
# Sequential Steps - Example

|     |  |
|-----|--|
|     | <b>Pipe Preparation</b>  |
| 5.  | Clean and wash the surface of the pipe in the area to be cut and attach the cutting equipment.                 |
|     | <b>Cutting/Tapping Operation</b>   |
| 6.  | Begin applying water to the area being cut and continue until cutting is complete.                             |
| 6.1 | A person outside the trench may apply water, if that is feasible.  |
| 7.  | Cut/Tap the pipe as directed by equipment manufacturer's instructions.   |
| 7.1 | The area must be continually wetted to ensure no A-C dust is created.  |
| 8.  | Detach Cutting/Tapping equipment. If a second tap is necessary, repeat the above steps at the second location. |
|     | <b>Waste Removal &lt; 1-foot Dimension</b>   |
| 9.  | Remove any piece(s) of pipe (biscuits). Place to one side, out of the operations area, in the trench.          |



# Conditional Steps

When a decision is based upon a condition or combination of conditions



# Conditional Steps

Describe the condition first and then the action to be taken if that condition applies

- ◆ IF / WHEN – the condition
- ◆ THEN – the action



# Conditional Steps

If two conditions are required place AND in underlined capital letters between the conditions

- ◆ AND – more complex conditions



# Conditional Steps

If two conditions are involved and if only one of these conditions must be met before action is taken place OR in underlined capital letters between the conditions

- ◆ OR – more complex conditions

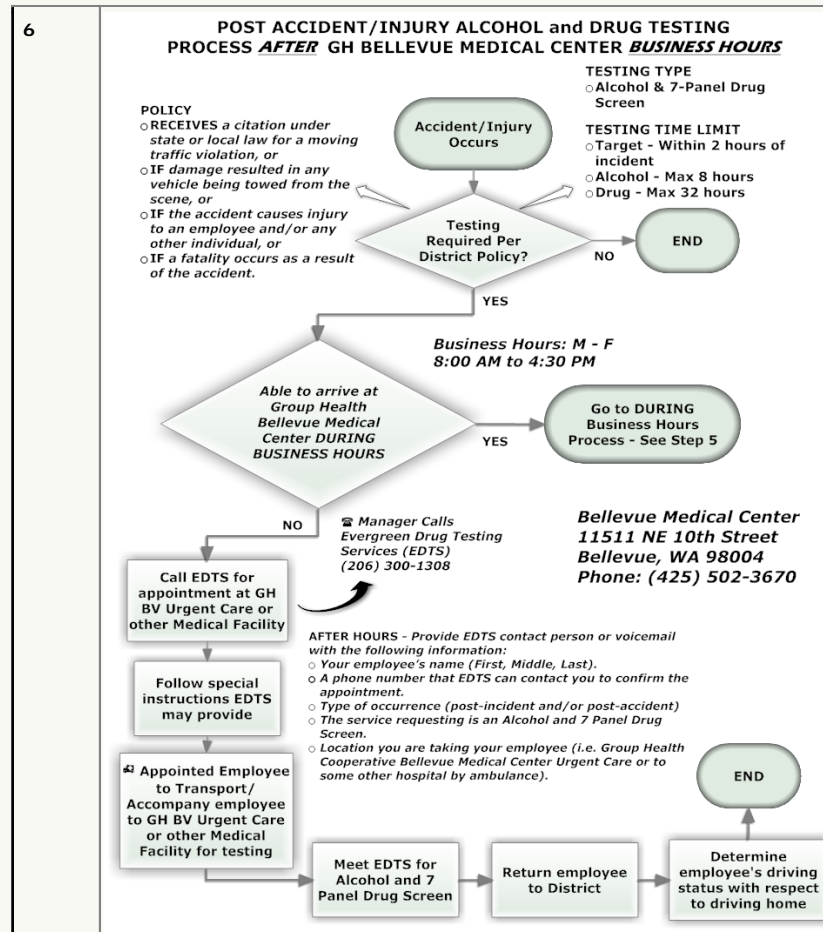


# Conditional Steps - Example

|   |   |                      |
|---|---|----------------------|
| 10  | If the required testing is not administered within the required timeframe, the non-testing must be documented per 49CFR382.303. Follow these steps:                                     |                      |
|   | <b>If</b>   | <b>Then</b>          |
|   | If the <b>alcohol</b> testing is not administered within <b>2</b> hours of the accident   | <b>Go to Step 11</b> |
|   | If the <b>alcohol</b> testing is not administered within <b>8</b> hours of the accident <b>OR</b> if the <b>drug</b> testing is not administered within <b>32</b> hours of the accident | <b>Go to Step 12</b> |
| <b>Alcohol Test not administered within 2 hours of the accident</b> |   |                      |
| 11  | Human Resources: Prepare and maintain on file a record stating the reasons the test was not promptly administered.  |                      |
| 11.1  | Use the Alcohol & Drug Testing Report Form (copy attached or see the HR tab on the Intranet).   |                      |
| 11.2  | <b>Go to Step 13</b>  |                      |



# Conditional Steps - Example





# MAKING CORN BREAD



# Making Corn Bread

This moist corn bread can be served with salads, soups, stews, chilies, or southern fried chicken. Try it toasted and spread with butter and jam in the morning.

- 1 cup **Albers® White or Yellow Corn Meal**
- 1 cup all-purpose flour
- 1/4 cup granulated sugar
- 1 Tbsp. baking powder
- 1 tsp. salt
- 1 cup milk
- 1/3 cup vegetable oil
- 1 large egg, lightly beaten



**PREHEAT** oven to 400°F. Grease 8-inch square baking pan.

**COMBINE** meal, flour, sugar, baking powder and salt in medium bowl. Combine milk, oil and egg in small bowl; mix well. Add milk mixture to flour mixture; stir just until blended. Pour into prepared pan.

**BAKE** for 20 to 25 minutes or until wooden pick inserted in center comes out clean. Serve warm.

**NOTE** Recipe may be doubled. Use greased 13x9-inch baking pan; bake as above.

## **FOR MUFFINS:**

**SPOON** batter into 10 to 12 greased or paper-lined muffin cups, filling 2/3 full. Bake in preheated 400°F oven for 15 minutes.



# Wrap Up

- ◆ Part 1 Recap
- ◆ Policy vs. Procedure
- ◆ The Nitty-Gritty of Writing SOPs
- ◆ The Biggie – Writing the Action Steps
- ◆ Making Corn Bread!
- ◆ SOP Handouts at the door



## - - Just For Fun - -

Three elderly gents were talking about what their grandchildren would be saying about them fifty years from now.

"I would like my grandchildren to say, 'He was successful in business,'" declared the first man.

"Fifty years from now," said the second, "I want them to say, 'He was a loyal family man.'"

Turning to the third gent, he asked, "So what do you want them to say about you in fifty years?"

"Me?" the third one replied. "I want them to say, 'He certainly looks good for his age.'"



# That's All, Folks

