CREDIBILITY OF THE INDICTING EVIDENCES OF NONCOMPLIANCE & ESTABLISHMENT OF CREDIBLE ENFORCEMENT RESPONSE SYSTEMS TO VIOLATIONS. Athens 14 & 15 October 2014

Presented by: Dr. Hosny Khordagui, Team Leader, SWIM-SM

OBJECTIVE OF 8TH PRESENTATION

- To identify and discuss the credibility of indicting evidences of noncompliance and establishment of a credible enforcement response systems to violations of water and aquatic environment regulations.

Monitoring Compliance with Water Regulations

- Monitoring compliance is the most important element of any enforcement program.
- Monitoring compliance by collecting & analyzing information on the compliance status of the regulated community is fundamental for the following reasons:

1. It detects & corrects noncompliance
2. It assesses the enforcement program progress
3. It provides evidence to support enforcement actions.

Evidences of Noncompliance

- Enforcement of these requirements will evidently necessitate the submission of **unchallenged & unquestionable** indictment evidences of violations & noncompliance to the court of law if deemed necessary.
- All aspects related to sampling & analyses procedures should be **(1)** recorded, **(2)** dated & **(3)** signed by the person who might **testify** regarding personal participation in the action & personal knowledge of the presented facts.

What Are the Evidences of Noncompliance With Water Legislation?

1. Official inspection reports.
2. Recorded personal observations during official inspections appropriately dated & signed.
3. Video recording of the offences with time & date.
4. Dated photographs including remote sensing with clear landmarks.
5. Examination of self-monitoring reports.
6. Specific conversation with identified witnesses.
7. The collection of samples at a particular time in a particular day & similar information.

What Prosecutors Are Looking For?

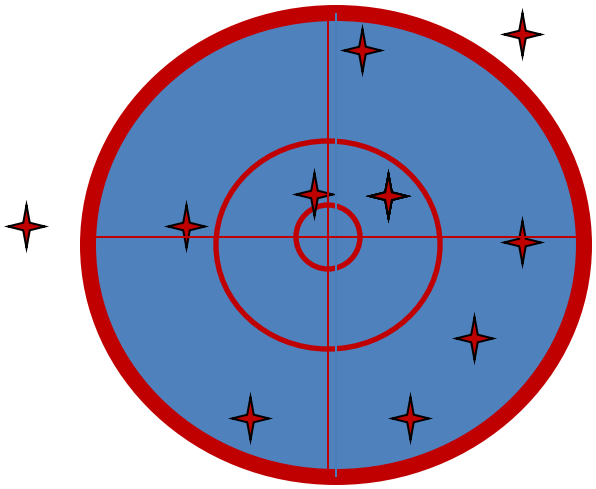
- Traditionally, prosecutors & judges are used to forensic evidences that are based on analysis & measurements. These are considered as “hard facts”, while oral descriptions of a damage to a water body are not accorded the same weight.
- In regular situation, an accredited monitoring system will carry out the observations, analyses or measurements.
- Monitored values are then interpreted by the regulating agency to show either compliance or noncompliance with permits to define the need for additional examination to confirm violations and impose sanctions.
- The court habitually attaches great importance to monitoring being carried out as prescribed in the authorization.

What Is Needed?

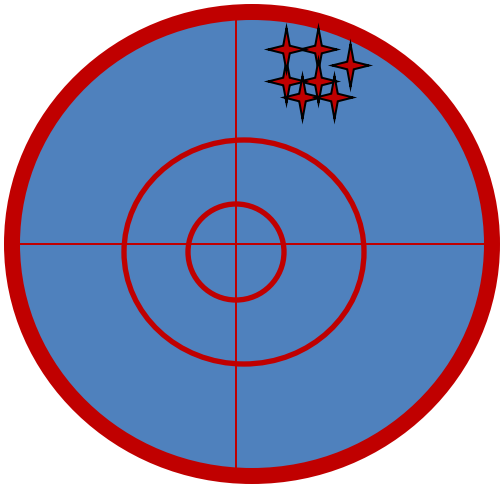
- Regulating agencies in SWIM-SM countries need to develop monitoring and inspection systems that can furnish credible evidence.
- SWIM-SM countries also need to develop standard monitoring methods admissible in the court of law.

Issues That Might Affect the Court Decision in Accepting the Evidences

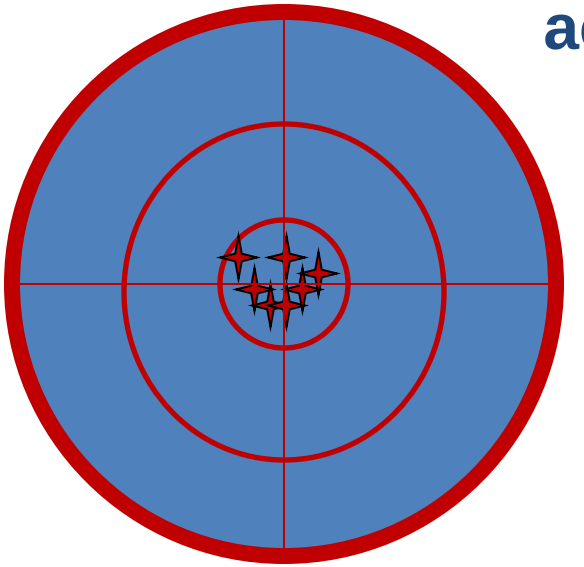
1. Precision & accuracy,
2. Reproducibility,
3. Sensitivity of the measuring methods,
4. Detection limit of the methods.
5. Reliability including routine maintenance & operation of sampling gears and measuring instruments.
6. Adopted (QA) & (QC) programs.
7. Flawless chain of custody.
8. Qualifications, training and competence of inspectors, field & laboratory operators.



Neither accurate nor precise



Precise but not accurate



Precise & accurate

Reasons for Systematic & Random Error

- **Systematic Errors**

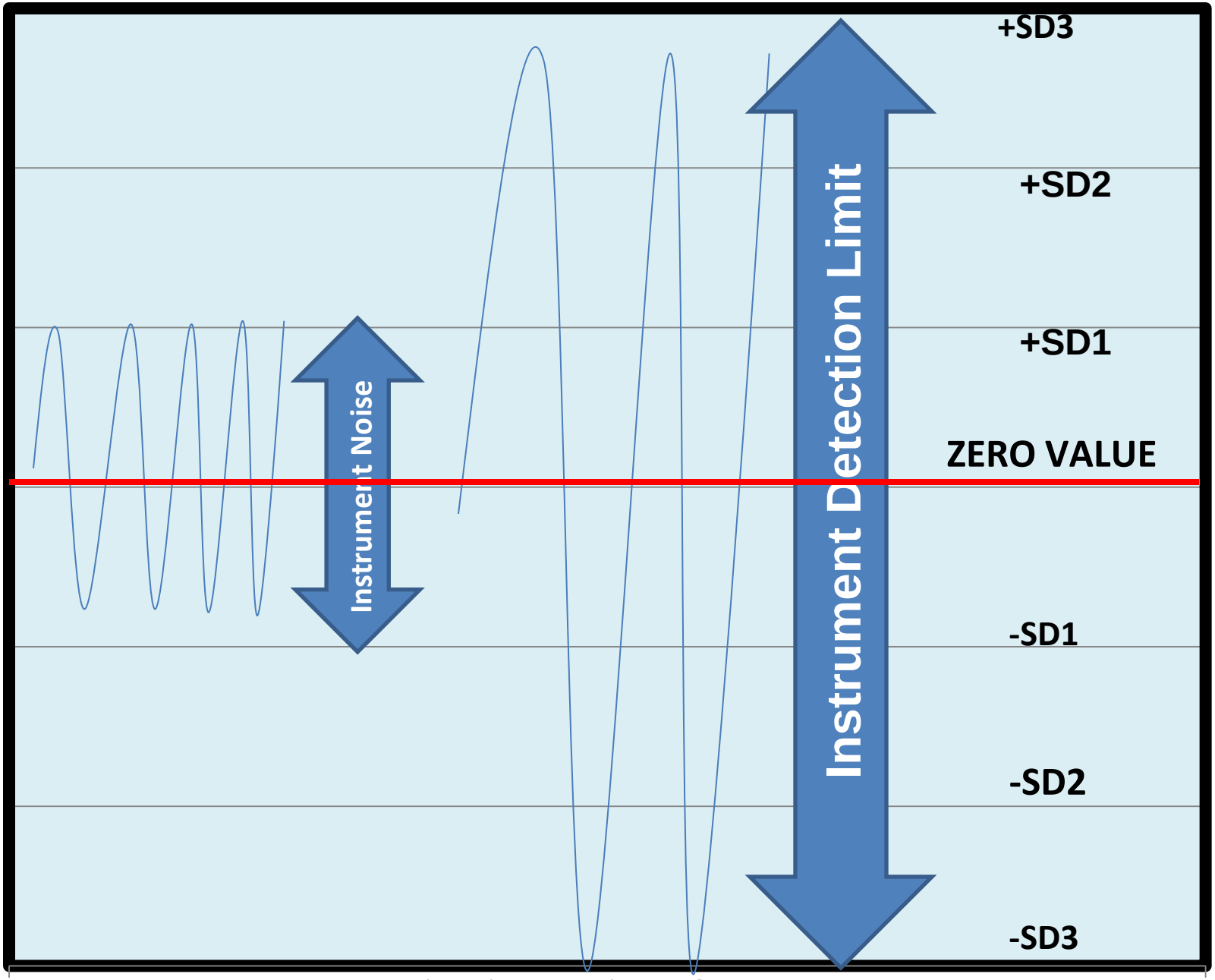
1. Bad calibration
2. Interfering substance
3. Overlooked blank
4. Malfunction of detector.
5. Defect in standard preparation
6. Error in calculation

- **Random Errors**

1. Noise in instruments
2. Lack of experience
3. Different methods of analysis
4. Heterogeneous sample
5. Different measuring conditions.

Limit of Detection (LOD)

- the detection limit is the lowest quantity of a substance that can be distinguished from the absence of that substance (a blank value) within a stated confidence limit (generally 1%).

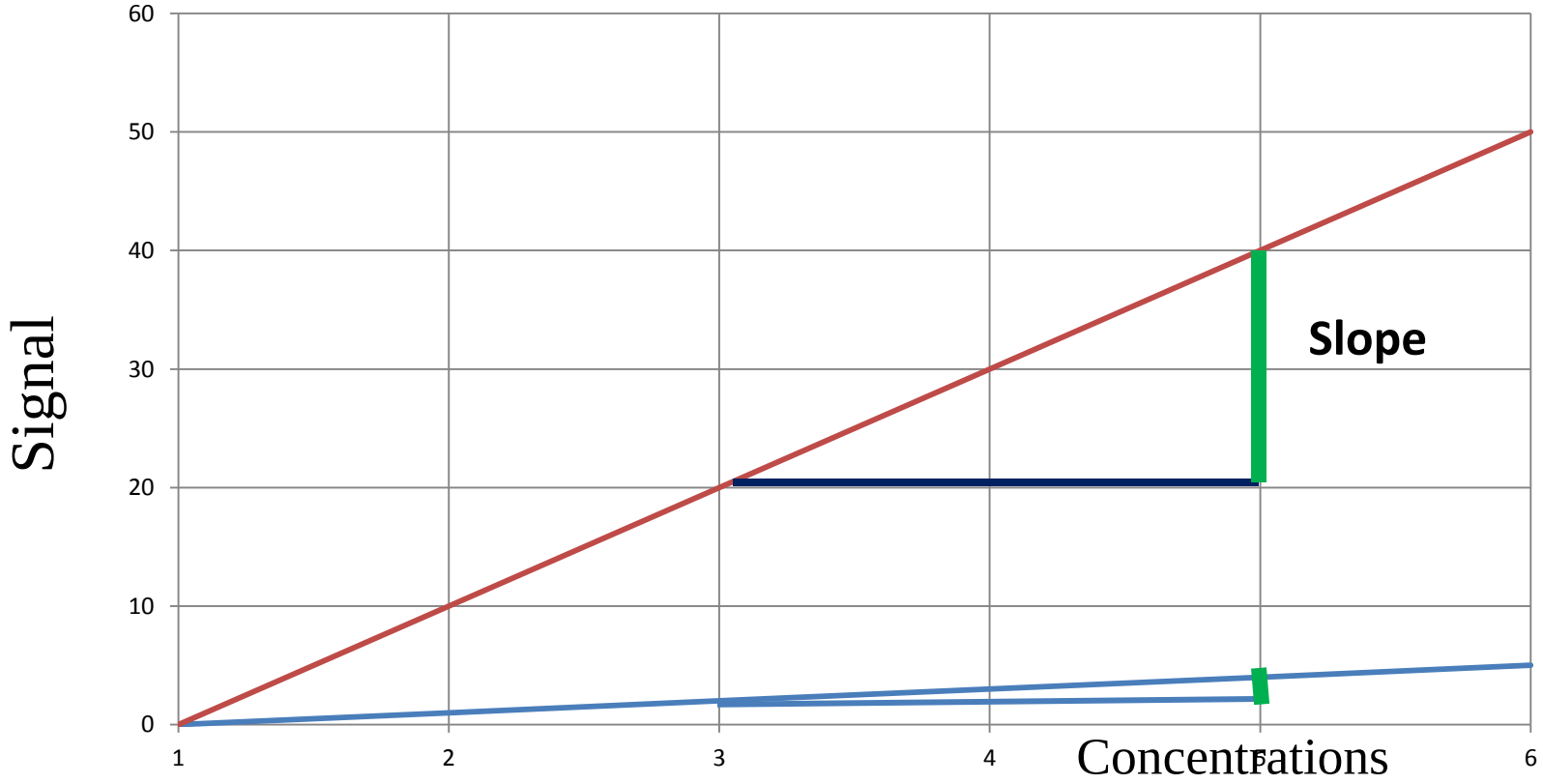

+SD3
+SD2
+SD1
ZERO VALUE
-SD1
-SD2
-SD3
Instrument Noise
Instrument Detection Limit

Why LOD is Important?

Assumed Pollutant	Reported Value in ppb	In Court
Mercury		X
Mercury	-	X
Mercury	zero	X
Mercury	Not Detected	X
Mercury	<MAL	X
Mercury	< than DL of 0.001 + Std. Method of analysis	Yes

Sensitivity

- Sensitivity is the slope of the calibration curve.



Sampling

- Sample collection is an important part of any compliance monitoring program. Without **proper** sample collection procedures, the results of such monitoring programs are neither useful nor valid, even with the most precise and accurate analytical measurements.

Evaluation of Sampling in Legal Investigations

- Any legal investigation will evaluate sampling procedures according to the following:

1. Sample collection techniques.
2. Field measurements.
3. Sample labeling (including location, date, time of the day, documentation, etc.)
4. Sample preservation & holding time
5. Transfer of custody & shipment of samples
6. QA/QC
7. Data handling & reporting.

Selection of Sampling Locations

- Normally, samples should be collected at the location specified in the permit issued by the regulating agency.
- that inspector must be familiar with the procedures & techniques necessary for accurate sampling of water & wastewaters.

Sample Identification Methods

- Identify each sample accurately & completely to eliminate any doubts around the case. Bar codes, labels or tags should be used to identify the samples that are moisture-resistant & able to withstand field conditions. The information for each sample should include the following:

1. Facility name/location
2. Sample site location
3. Sample number
4. Name of sample collector
5. Date and time of collection
6. Indication of grab or composite sample with appropriate time and volume information
7. Identification of parameter to be analyzed
8. Preservative used.

Sample Preservation & Holding Time

- Water & wastewater samples contain one or more unstable pollutants that require immediate (e.g., within 15 minutes) preservation and/or analysis. Provide appropriate chemical preservation before transferring samples to the laboratory.
- Analysis of samples within one day ensures against error from sample deterioration. Where possible, provide sample preservation during compositing, usually by refrigeration to 4°C (or icing).

Transfer of Custody & Shipment of Samples

- To ensure the validity of the permit compliance sampling data **in court**, written records must accurately trace the custody of each sample through all phases of the monitoring program.
- The primary objective of this chain-of-custody is to create an accurate written record that can be used to trace the possession & handling of the sample from the moment of its collection through its analysis and introduction **as evidence**.

Credibility of Handling & Shipping

You need to provide the evidence that you:

1. Used sample seals to protect the sample's integrity from the time of collection to the time it is opened in the laboratory.
2. Sealed the shipping container to detect any evidence of tampering.
3. Placed samples on ice to maintain sample temperature at 4°C throughout shipment.
4. Accompanied all sample shipments with the chain-of-custody record and other pertinent forms.
5. Transferred possession of samples only after signing and recording the date & time on the chain-of-custody record.

REPORTING

- The format and content of a data report depends on the government regulating agency's reporting format.
- Data are checked & approved by the unit supervisor. The final report is signed by the laboratory manager & includes:
  1. Sample ID used by the laboratory.
  2. Sample matrix type, description & method number.
  3. Chemical/physical/biological parameters analyzed.
  4. Reported values & units of measurement.
  5. Method detection limits of the pollutant.
  6. Data for all reported parameters.
  7. Results of QC samples.
  8. Footnotes to explain specific data.

مع خالص شكري
وامتناني

Thank you for your attention

Merci pour votre attention

For additional information please contact:
Sustainable Water Integrated Management – Support Mechanism: info@swim-sm.eu