

Environmental Manager Trainee and Certification as The Pollution Control Program Implementation in West Java Province

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Abstract

The Increasing of the humans and industries activities are the main cause of the water environmental quality and quantity degradation in Indonesia. Citarum River in West Java, for example, its function as the drinking water and power sources has been threatened because of the significant degradation in its quality and quantity. Various treatment efforts have been conducted either by government or stakeholders but have not shown an optimal result. The approaches that have been conducted are pollution control through stipulating standard quality that has mandatory character, ISO standardization and industrial commitment to government programs (Proper and Clean River Program). Environmental Pollution Control Manager (EPCM) represents one of the individual reinforcement programs to improve the capability of human resource that has responsibility in industrial pollution management with certification program. This program has been initiated since 2002, representing as the first program in Indonesia cooperating with JETRO (Japan External Trade Organization). Legal formal of this program is The West Java Provincial Regulation No. 3/2004 concerning Water Quality Management and Water Pollution Control Of Contamination mentioning "each person or agency which conducting waste disposal to water sources must have certified person in charge and operator of Waste Water Treatment Plant (WWTP)". This program is conducted by certification agency (independent) with supervision from West Java Government. It is held regularly once in a year. In 2005, the program has been followed by 61 participants and increase to 83 participants in 2006. Besides conducting training and test, it is also conducted text book up dating, socialization to industries in entire area of West Java, Training of Trainer and also refreshment to the previous participants.

Key words: Pollution Control Manager, Waste Water Treatment Plant, Environmental degradation

1. Introduction

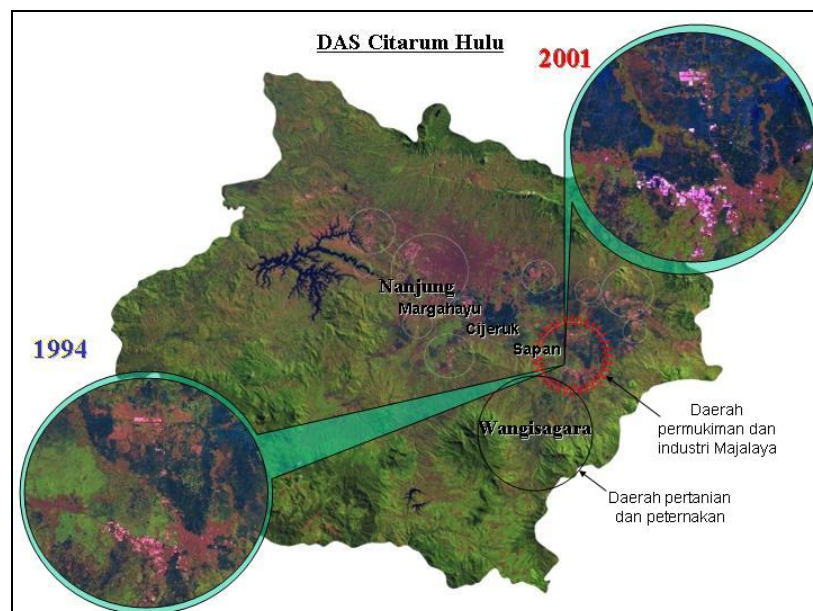
West Java Province geographically is located between 5^o50' - 7^o50' and 104^o48 LS - 104^o48 BT with its regional boundary north side on Java Sea and DKI Jakarta and eastside boundary on Central Java Province, between Indonesia Ocean in Southside and Banten Province in Westside. It has a tropical climate, with temperature 9^oC in top of The Pangrango Mountain and 34^oC in Coast North, rainfall average is 2000 mm per year, but in some mountains are between 3000 to 5000 mm per year.

West java region has more than 35 watersheds of both big and small scale, 20 watersheds run in northward and 15 in southward.

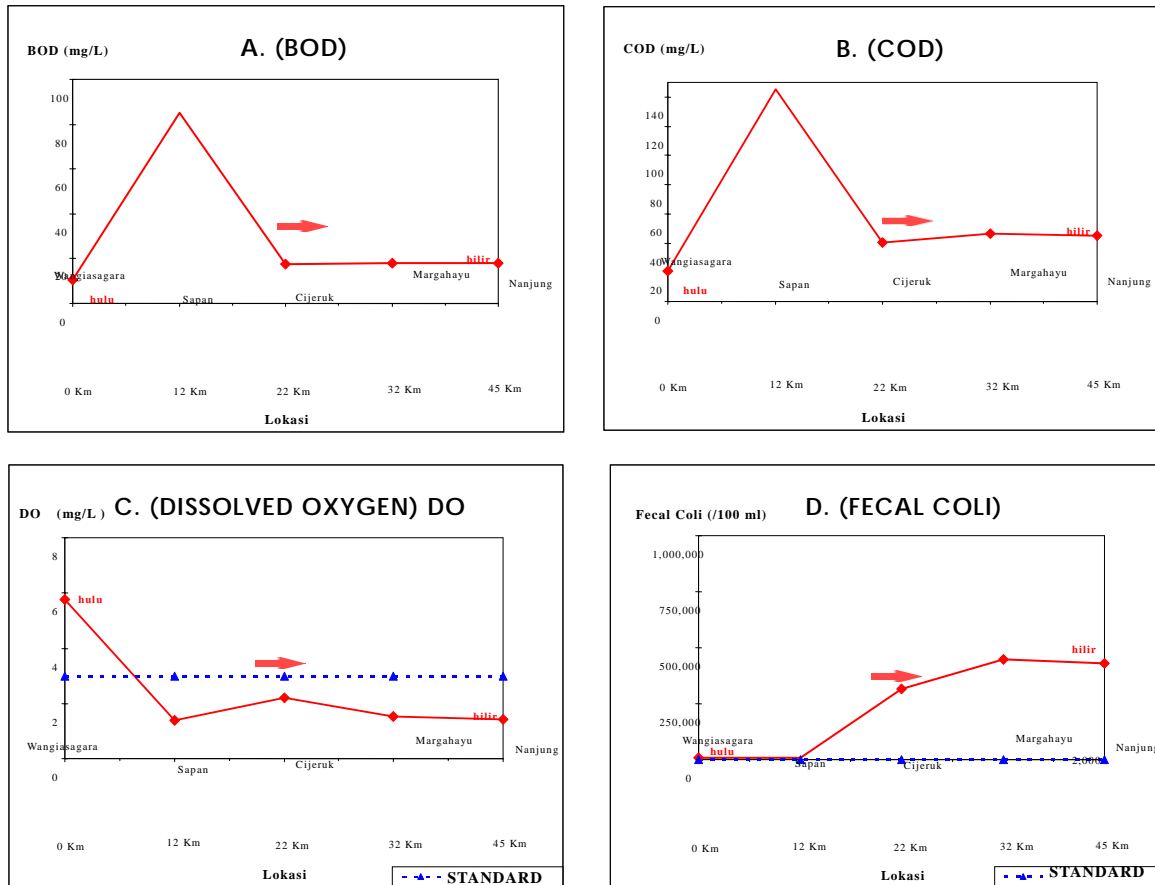
The biggest and the most important river in West Java is Citarum River, with total area of 6.080 km², length of 269 Km, rain fall of 2.300 mm/year. The usage of Citarum river are drinking water source for many cities such as Jakarta, Kabupaten Bekasi, Kabupaten Karawang, Kabupaten Purwakarta, Kabupaten Bandung, and Bandung City; main supplier for 3 big dams (Saguling, Cirata and Jatiluhur) for electricity generator. Those 3 reservoirs produce electrical energy of 5.000 giga watt hour (5x10⁹ KWH)/year, equal to 16 x10⁶ ton/year fuel energy and as irrigation source for 300.000 Ha paddy field. On the other hand, alongside Citarum River has approximately 1000 industries causing Citarum River facing many complex problems such as (1) decreasing of Citarum River water quality and quantity, generally caused by industrial waste, domestic waste, agricultural waste and animal husbandry; (2) depletion of carrying capacity due to land covering change, mixed land use between industrial and domestic will make bigger pollution loading; (3) decreasing of Citarum River level in dry season and increasing in wet season because decreasing of catchments area in upper stream.; and (4) lack of institution coordination in Citarum watershed, because Citarum River passing 7 Kabupaten in West Java Province, with many interest there.

Relation between average Citarum Upstream water quality, for some chemical and bacteriological parameters with the distance (upstream-downstream) in Wangisagara, Sapan, Cijeruk, Margahayu dan Nanjung shown in a pictures.

Changing in Citarum River quality significantly occurred after Sapan station. This station placed in Upstream Citarum River from Wangisagara direction after passing the farm, residential, and industrial zone. The inset picture below show the comparison between landscape image of year 1994 with 2001, LAPAN interpretation (2001).



Picture 1. River pollution contribution in Sapan Station



Picture 2. Average Upstream-Downstream Citarum River Water Quality Change (1990 – 2000), West Java EPA 2001.

Dissolve Oxygen (DO) at Wangisagara is 5,76 (mg/L), it still fulfill the regulation (West Java Governor Decree No. 39/2000) which is above 3 mg/L. DO decreased after 12 km from Wangisagara (Sapan) into less than 2 mg/L, it had a little increasing at Cijeruk (10 km after Sapan), and decrease again at Margahayu (10 km from Cijeruk) and Nanjung (13 km from Margahayu) into less than 2 mg/L. BOD and COD parameter are increasing after Sapan station, there are 10,34 and 20,73 mg/L at Wangisagara, getting more and more increase into 85,18 and 145,35 mg/L at Sapan, and decrease into 17,95 and 45,38 mg/L at Najung.

Fecal coli number show different pattern, there are 8.511 / 100 mL at Wangisagara, 9.500 / 100 mL at Sapan, and significantly increase at Cijeruk (315.468 / 100 mL), and increase constantly to Margahayu (446.728 / 100 mL) and 429.818 / 100 mL at Nanjung.

From the analysis, the cause of the increasing number of BOD, COD, and Fecal Coli are the direct contamination from the untreated waste of residential, industrial, agricultural, and animal husbandry along the Citarum River.

One of the problems solving on Citarum river quality degradation is by improving human resources that will manage and responsible to the industrial pollution with certification program called Environmental Pollution Control Manager (EPCM).

2. About EPCM in West Java province

West Java Government has been cooperating with JETRO (Japan External Trade Organization) for Environmental Pollution Control Manager (EPCM) program since 2002. Environmental performance from industry is highly determined by ability of its personnel which is concerned in the management effort of industrial environmental impact. Besides requiring personnel owning knowledge, skill, and adequate behavior, it is also concerning about involvement of the competence personnel that have to be institutionalized in a functional organization which has the division of role, duty and responsibility. To reach the target, West Java Government obligates industries causing water pollution, air pollution, land and ground contamination as well as noise trouble and vibration to have Environment Pollution Control Organization.

Environmental pollution control organization in the industry consists of Environmental Manager, Technical Coordinator and Operator of waste installation. The duty of the Environmental Manager is to conduct effectiveness and performance of all pollution control; the technical coordinator must be have responsibility to the technical pollution control and the duty of operator of waste installation is controlling the waste disposal facilities such as waste water treatment, emission and incinerator.

Environment pollution control organization in the industry must have written document about organization structure with role, responsibility, and authority for every personnel, job description and standard operational procedure. Environment pollution control organization has to be registered to West Java Government, which is West Java Environment Protection Agency (West Java EPA). After that, West Java EPA submits information concerning the environment pollution control organization to environmental institution in local government (Kabupaten/City). West Java EPA authority is to observe organization performance and can substitute the personnel if the industry has poor performance.

3. EPCM implementation in West Java province

3.1 Regulation

We have 3 Acts as an legal formal for EPCM implementation which are The Act of Environment No 23 Year 1997, The Act of Manpower No 13 Year 2003, and based on that act, West Java Province made regulation of waste water pollution control and is acted by governor decree on environmental human resources and West Java Provincial Regulation No. 3/2004 concerning Water Quality Management and Water Pollution Control Of Contamination mentioning that *"each person or agency which conducting waste disposal to water source must have certified person in charge and operator of Waste Water Treatment Plant (WWTP)"*.

3.2 Objective

EPCM objectives are to Support the government in the effort to control industrial environmental impact; Forming an acceptable and applicable EPCM training and certification scheme to various stakeholder group including industrial owner and management, community, government, legislator, professional groups and training agent; Provide added value to human resources involved in the industrial pollution control field and provide formal recognition of the profession of environmental

manager; Create a fair and transparent certification mechanism to be managed by stakeholder; Encourage training provider to develop related and supporting training program.

3.3 Outcomes

Expected outcomes of implementation EPCM are creating basic concept of PCM standard competency ; PCM classification and qualification; certification mechanism; required training program and institutional scheme included accreditation mechanism for training providers; Implementation of strategy and planning; included development of legal frame work, capacity building of independent certification body and long term implementation plans; Training curriculum and methods; Format of examination and certificate; Develop the training manual and text book.

3.4 Institutions

Institutions involved in EPCM certification implementation consist of Advisory Board, Supervisory Board, Certification and Training Agencies. Certification Body handling by Association Industry of Indonesia (APINDO) and Environment Professional Association (IATPI).

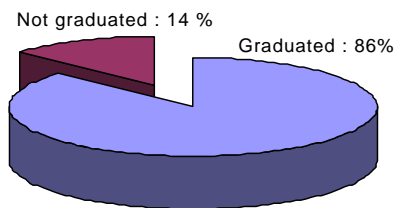
3.5 Certification Mechanism

The industrial WWTP operator/coordinator who have an educational background, at least diploma degree in environmental engineering and 2 years professional experience, can directly register to take examination. If he/she unable to full fill those requirements the applicant has to take training before taking examination.

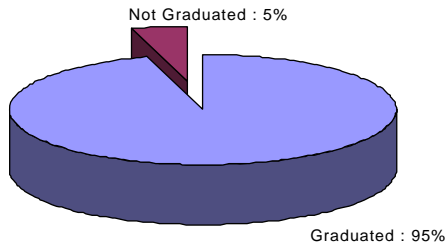
Curriculum of The Training consists of nine materials, which are EPCM Background, Liquid Waste and Water Environment Preservation Regulation, Role and Responsibility of Water Pollution Control Manager, Water Environment Management, Liquid Waste Management, Liquid Waste Management Technology, Liquid Waste Characteristic Analysis, Sludge Treatment, and Water Pollution Emergency Action.

The Pilot activities (training session, examination, and certification) in 2005 followed by 61 participants, which 53 participants were graduated and 8 participants were not graduated. In 2006 the participants increase to 83 participants, which 79 participants were graduated and 4 participants were not graduated.

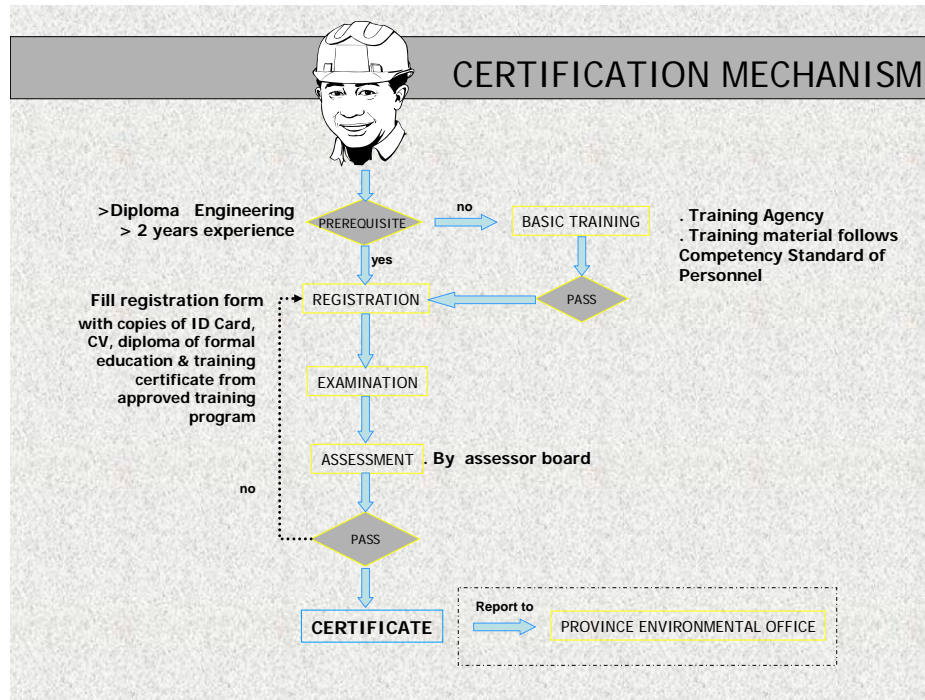
Percentage of Certification Graduation in 2005



Percentage of Certification Graduation in 2006



Picture 3. Percentage of Certification Graduation in 2005 and 2006



Picture 4. Certification mechanism diagram

3.6 Monitoring, Evaluating, and Reporting

Supervising and monitoring conducted by The Board in coordination with the environmental control institution in Kabupaten/City and The Certification Body. The Board can process any disobedience according to the existing law and regulation.

4. Conclusion

The Environmental Pollution Control Managers (EPCM) program is the first pilot project conducted in Indonesia concerning human capacity development for pollution control in industry. The West Java Government expect that EPCM program can control industrial pollution in Citarum River, considering its big role as the drinking water and power sources. Next step will be EPCM implementation in air pollution, hazardous waste, noise and vibration control. Supervising and monitoring is the success key for this program beside the support from all stakeholders, such as industry, local government, NGO'S, University, and Professional.

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