

WASTE MINIMIZATION



AIM

The old English adage rightly says 'waste not want not'. To create an awareness of the danger of reckless handling of God given natural resources.

SCOPE

Why and how waste is created? Many of us do not know that in spite of best efforts, population explosion is increasing at an alarming rate. Every forty years, the population is doubling. By the year 2020 the globe will have to support a stunning population of 1200 billion people, their houses, cars, offices, roads and bridges, the cattle and the forests or greenery, the farm lands and food stock. There is wastage at every stage and every sector.

'Conservation' is just a slogan in the air or on paper but not practiced in life. Waste or under utilisation of raw material or energy, waste of food and products, piles of garbage and disposal issues, delay and failures- all of these lead to pollution and health problems.

We are at the edge of dwindling resources not only for oil, but water materials as well. This seminar on waste management comprises of three parts

1. Waste identification and minimisation plans

2. Waste utilisation and alternate process-innovation.

3. Waste elimination (if possible) by lean management

By dividing groups for discussion on materials and methods - a plan and strategy model is worked out.

We sit fingers crossed thinking who is responsible for all this mess. The only answer is-waste minimisation/avoidance, then create and suffer. This course addresses various steps of achieving that

WHOM TO ATTEND

All those involved in safety, purchase and stores and public utilities

METHODOLOGY

The author is well known for his graphic presentation. The entire course in colourful power point slides, charts and flow diagrams. He has a hundreds of case study photographs and videos to present.

The student manual can be colourfully printed or a CD provided

COURSE OUTLINE

DAY 1 WASTE IDENTIFIED- IN GENERAL AND IN PARTICULAR

What do we mean by waste?- the various sources of waste- the problems of waste handling-typical waste quantification- identifying industrial waste and

types- the hierarchy of six steps of waste minimisation-flow diagram –the sustainability diagram – avoid ,reduce, recycle, reuse and dispose explained in terms of some key industries .

Overview of lean management.

TOYOTO – JIT (automation) and Kaizen (7 types of waste)

Six sigma principal and 5S.Evaluation of this model designed for mechanical industry,to fit into a chemical process plant (like urea manufacture).

Can process be slowdown or expedited based on demand? Are plants design for surges in production rate? - can material behaviour and corrosion aspects be overlooked? – how many steps of Kanban can be incorporated into chemical industry for waste management?.

DAY.2 METHODS OF WASTE MINIMISATION AND BENEFITS

Classification by plant and machinery

A. factory layout and probability of waste locations and material-Classification of materials- solids-metals and non metals- transport to utilisation waste percent- liquids and types of waste water and handling issues- gases storage and leakage issues-

Incomplete reaction and waste – purification and stripping processes – waste water or steam – catalysts – recycle .

Sulphur recovery plant – tail gas and flaring – heat recovery – wastage and loss vs handling., sulphur-hydrogen- acids and alkalis – solvents and vapours-mercury ,vanadium cadmium chromium – assets/ - proactive actions for reduction of pollution and environmental issues – stepwise analysis to see if minimisation can be implemented in any process

Day 3 PLAN FOR IMPLEMENTATION

Any waste due to unscheduled shutdown – cause and failure analysis and corrosion control for proactive action – implementation of KANBAN on lost time prevention – lost product handling – recycle economy or disposal.

Plans for waste minimization are waste avoidances – pro active -

Who to draw a plan?- where to implement and how?- stick or carrot?- control measures- what to audit and how?- cost of control outweighs cost of waste? Waste recovery and benefits- reuse and

recommendation- recycling methodology and plans- cost of recovery- training and education- health and safety – product modification and or alternate utilisation-working individual department plan and integrating in to a master plan for entire organisation.

Plans for Waste avoidance incorporating

- Effective use of raw materials.
- Economic returns. reduced purchasing and stock of new materials.
- Public image. Reduced Waste disposal-The environmental profile
- Alternate use for waste- New innovation and technological practices.
- Added economic benefit of eliminating waste – stock and disposal

Case studies and discussion

DAY 4 WASTE MINIMISATION – PLAN AND AUDIT – REPORT

1. Department and plant base waste identification.
2. Quantification of waste daily and annually.
3. Cost of waste recovery and disposal.
4. Cost and time of waste minimization plan.
5. Team work and responsibility.
6. Modification of waste management plan or evolving new plan.
7. Working out a trial plan and evaluation.
8. Audit and implement or reject.
9. Consequences – benefits are disadvantages of plan.
10. Sustainability of plant and machinery and operational issues of incorporation a lean management in chemical industry.

Where to begin an audit?- who is to audit and what?- committee for audit-format for audit and working an audit plan- prioritising- too much and too less- worry or ignore-identifying waste by plant or department-identifying waste in public places – stores, transport loading and unloading-**identifying waste unseen**-time, energy, space, paper work-decentralising- authority and responsibility

DAY 5 WORKING OUT A PLAN FOR MY INDUSTRY

Service department waste minimisation

1. Canteen, hospitals and health service – hidden loss of time and paperwork and delay.

minimisation and austerity measures vs. health impact

2. Stores and inventory control – is JIT possible? can inventory be reduced? – is there overstock of raw material or product? – statistical data demand based production or global competition – high volume low margin or demand high price policy ethics and logics. Fluctuations in production and design criteria compatibility.
3. Transport – loading and despatch – direct cost of wasted material if any – Paperwork and delay

AUTHOR

The author holds a doctorate from the Chemical Engineering University of Veszprem in Hungary

He worked for 15 years in Hi Tech. National Laboratory trained in modern Analytical techniques.

He worked as specialist Engineer in Govt. of Abu Dhabi as Head of Corrosion and Inspection from 1982 till 2002 during which 5 major projects were implemented. During this period the author inspected all stages of testing, commissioning, or

The drawing board- the informers- the data acquisition- categorizing and input- segmentation of waste sectors - entry gate to exit gate- the time and documentation- the cost of this exercise- waste disposal plan- stores and inventory – scrap and disposal

Case study and report writing

Discussion/video

maintenance during which safety and housekeeping of all contractors were mandatory. Waste disposal was an integral part of all contracts and fines for all violations.

The author is a Lead Instructor for NACE international travelling to USA, Egypt, Kuwait, Saudi, Qatar and Dubai teaching 4 subjects. In addition he has been teaching safety and other subjects to oilfield personnel for the past 10 years. One subject was for stores personnel on Inventory control and waste management and waste water management.