

**ROLE OF  
CHEMICAL AND METALLURGICAL STAFF  
IN INDIAN RAILWAYS**

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# INTRODUCTION

- C&M Staff are attached to the major workshops with a technical laboratory, equipped to carry out all the necessary Chemical & Metallurgical tests.
- They are responsible for quality control on manufacturing and other operations in the workshops and sheds involving special knowledge of modern chemical and metallurgical techniques keeping in view the maximum out turn of workshops.

# DUTIES

- Chemical & Physical Testing of Ferrous/ Non-Ferrous metals, Rubber, Plastics, Plywood, Composites, FRP materials, Electrical cables, Adhesives, Sealants & all other materials used in Indian Railways.
- Testing of Welding Consumables, Trials on Welding processes for Rly. coaches, bridges, tracks etc.
- Radiographic testing of Welds (Critical joints), Castings, Forgings etc. for detection of defects.
- Ultrasonic Testing of Wheel & Axle during manufacture & running in Railway Coaches for detection of defects.

## DUTIES (*Continued*)

- Magnetic Particle Inspection (MPI) of Spring Steel bars & Springs for detection of defects.
- Testing of Paints & surface coatings used for corrosion prevention on Railway coaches & other useful assets.
- Testing of Oil, Grease, Coolants & other Lubricants in Production Units/Diesel Sheds for proper running of Locomotives.
- Standardization of new materials used for rolling stock.

## DUTIES (*Continued*)

- Process control of welding of Bogie frames, Under-frames, Shell etc. at Shop Floor for Conventional, Export and LHB coaches.
- Welder approval for SAW, MIG, TIG, Spot welding processes
- Process control in heat-treatments of Annealing, Normalizing of Forged Components.
- Process control in heat-treatments of Hardening and Tempering of Coiled Springs.

## DUTIES *(Continued)*

- Process control in Corrosion prevention & Phosphating.
- Process control in Paint shop.
- Calibration of Measuring & Testing Equipments.
- Consultancy to Design Wings of all Engineering Departments of Indian Railways for selection of proper raw material, process etc.



SPECTROMETER FOR CHEMICAL ANALYSES



WEATHEROMETER FOR PAINT TESTING



UNIVERSAL TESTING MACHINE FOR TENSILE, BEND ETC.



COLLECTION OF SAMPLES FROM BATHS OF CHEMICAL PROCESS



MAGNETIC PARTICLE INSPECTION OF SPRING BARS

# REVENUE TO RAILWAYS

- By testing the materials used for manufacture and maintenance of Railway Rolling stock, the C&M organisation certifies Crores of Rupees worth materials every year for ensuring safety of passengers and also earns Lakhs of Rupees every year by way of test charges on rejected materials.

# ADDITIONAL DUTIES

- Carrying out failure analysis of components used in Rolling stock and advising the necessary corrective and preventive action to avoid such premature failure.



# ADDITIONAL DUTIES *(continued)*

## Quality Management Systems (ISO:9000) :

- Preparation of Quality Manuals and related documents.
- Co-ordination for Process Qualification Requirements.
- Co-ordination for Process Validation Requirements.
- Conduct Periodical Internal Audits
- Subject to External Audits.

# ADDITIONAL DUTIES (*continued*)

## Environment Management System

### (ISO-14001/2004):

Measuring and Monitoring environment around the factory as per the stipulations of Pollution control Board

- Measuring & Monitoring of Ambient Noise level
- Measuring & Monitoring of Quality of stack Gases
- Measuring & Monitoring of Ambient Air Quality
- Measuring & Monitoring of Water quality.
- Testing of Sewage water.
- Identification, segregation & safe custody of Hazardous wastes.
- Operation & Maintenance of Trade Effluents generated.

# ADDITIONAL DUTIES *(continued)*

## OHSAS - Occupational Health & Safety Assessment (BS-18001/2007):

- Measuring Sound level at Work place, Reducing sound level in the high noise zone by Engineering methods, Advising the employees to wear PPEs, Sending them for periodical medical checkup.
- Checking of Light Intensity
- Heat stress monitoring
- Welding fumes analysis
- Checking of Paint fumes - Volatile Organic Compounds (VOC)
- Monitoring of Air Quality inside the Workshops.

# HEALTH HAZARDS

- C & M staff are exposed to acid & chemical fumes/vapours while wet-analysis and control of Chemical processes.
- C & M staff are exposed to X & Y radiations while Radiographic testing.
- C & M staff are exposed to Kerosene vapours and also Black Light (UV) while MPI in curtained booths.

# GRADES OF POSTS

- Qualification for entry Grade of C & M Asst Gr-II is B. Sc (Chemistry) in previous pay of Rs.5000-8000
- Qualification for Grade of C & M Asst. Gr-I is M.Sc (Chemistry) or B.E/B.Tech (Chemical/Metallurgy) in previous pay of Rs.5500-9000  
(Grades in other Tech. cadres with M.Sc or B.E/B.Tech are placed in previous pay of Rs.6500-10500)
- Promotional Grades:  
C & M Supdt Gr-II in previous pay of Rs.6500-10500  
C & M Supdt Gr-I in previous pay of Rs.7450-11500

# STAFF STRENGTH

- The total staff strength is approximately 1700 in the entire Indian Railways, distributed in 15 major Zonal Railways, 7 production units, 30 Diesel sheds and 10 Electric loco sheds across the country.

CMA Gr-II	---	170	(10%)
CMA Gr- I	---	340	(20%)
CMS Gr-II	---	561	(33%)
CMS Gr- I	---	629	(37%)

- Promotional Avenues for CMS-I is very limited. There are many cases of Staff joining Group-C and retiring in the same Group.
- Total Posts of ACMT (Group-B) --- 56  
in Zonal Railways & Production Units

# TRAINING

- Owing to the nature of work, this is the only department , where all the staff are sent for training/refresher Courses at RDSO/LKO & IRIMEE/Jamalpur.
- Specialized training in the field of Industrial Radiography, Ultrasonic Testing, Welding, Paints, ISO 9000/14000/18000 are given at BARC/Mumbai, BHEL/Trichy , RDSO/LKO, IRIMEE/Jamalpur, TUV Agencies etc.

# CATEGORISATION

- Since C&M Organisation is placed in the unorganized sector (Non-technical/miscellaneous category), the primary importance to be given for this Organization has been deprived. C&M Staff are directly / indirectly responsible for production & maintenance of Railway Rolling stocks. Placing them in the unorganized sector is unjustified. Hence, it is demanded that C&M Organisation should be declared as Organised Sector (Quality Assurance wing of Mechanical department).
- Since this organization is placed in the unorganized sector, the benefits\* given to Counterparts in other Mechanical Dept. were denied to the C & M Staff.

*\*(RB's letter No. E (GP) 2003/2/22 dt. 16.06.2003 for upgradation of 80% of group 'B' post of all major Depts., was not applied to C&M Organisation)*

# ANOMALY BY SCPC

- SCPC has created peculiar anomaly by merger of CMA-II & CMA-I.
- Grades with different criteria of qualifications have been merged.

# DEMANDS

- C&M Asst. to be upgraded in revised pay to Grade pay of Rs. 4600.
- C&M Supdt. to be upgraded in revised pay to Grade pay of Rs. 5400 Gazetted.
- C&M Asst. recruited with M.Sc or B.E/B.Tech to be upgraded as C&M Supdt. to comply with the spirit of Para: 2.2.21(v) of SCPC Report.
- C&M staff to be redesignated as JE(C&M), AE(C&M) similar to Production/Design staff.

## DEMANDS (*continued*)

- C&M staff engaged in hazardous works should be given Risk Allowance.
- C&M staff should be given Performance Allowance similar to Production staff.
- The C&M Organization should be declared as Organized Category (Quality Assurance Wing of Mechanical Department).

# CONCLUSION

- Railway Board's Management Service Letter of Dec 2000 observes:  
“Chemical & Metallurgical Organisation of Indian Railways functions as a back bone of entire quality control and preventive maintenance exercise of all the Engineering departments”
- Railway Board should honour its own observation by immediate sanctioning of the demands of Chemical & Metallurgical Staff.