

Format for Bio-Data

1. **Name:** Dr. Abhay Kumar Singh

2. **Date of Birth:** 10-07.1968

3. **Current Position and Address:**

(with E-mail & Phone no.) Principal Scientist,
Environmental Assessment & Remediation
CSIR-Central Institute of Mining & Fuel
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4. **Educational Qualifications:** (Graduation and above)

<i>S. No.</i>	<i>Degree/ Certificate</i>	<i>Year of Passing</i>	<i>University/ Institute</i>	<i>Subjects</i>
I	B.Sc. (Hon)	1988	BHU, Varanasi	Geology
II	M.Sc.	1990	BHU, Varanasi	Geology
III	M.Phil.	1993	JNU, New Delhi	Env. Sci.
IV	Ph.D.	1997	JNU, New Delhi	Env. Sci.

5. **Work experience:**

Designation	Institution/company	From	To	Nature of work
Principal Scientist	CSIR-CIMFR, Dhanbad	07-07-2010	Continued	R & D
Senior Scientist	CSIR-CIMFR, Dhanbad	07-07-2007	07-07-2010	R & D
Scientist 'C'	CSIR-CIMFR, Dhanbad	07-07-2003	07-07-2007	R & D
Scientist 'B'	CSIR-CIMFR, Dhanbad	07-07-1999	07-07-2003	R & D
Research Associate	J.N.U., New Delhi	Feb. 1998	05-07-1999	R & D
Senior Research Fellow	J.N.U., New Delhi	July 1993	July 1996	R & D
Junior Research Fellow	J.N.U., New Delhi	July 1991	July 1993	R & D

6. **Area of specialization:** *Environmental Geochemistry/Mining Environment/Hydrogeology*

7. **Honors/Awards received:**

- i. **National Geoscience Award - 2013**
- ii. **Best Paper Award** on Citation Basis, CIMFR 2008.
- iii. Indian Science Congress (**ISCA**) **Young Scientist Award**, 1999.
- iv. **Principal Investigator** for DST Young Scientist Project under Fast Track Scheme (2002-05)
- v. **Jury Member** of the National Children Science Congress 2004-05, 2012, 2013.
- vi. **External Examiner** for the M.Phil and Ph.D. Thesis of JNU-New Delhi, Pondicherry University and Vinova Bhawe University- Hazaribag.

- vii. **Guide and co-guide** for Ph.D (2), M.Phil. (5), M.Tech (5) and M.Sc. (14) thesis and dissertation
- viii. **Reviewer** for National and International Journals (i.e.- Journal of the Geological Society of India, Environmental Geology/Environmental Earth Sciences, Journal of Atmospheric Chemistry, Environmental Monitoring & Assessment, Journal of Earth System Sciences, Journal of Environmental Management, International Journal of Environmental Research and Public Health, Indian Journal of Environmental Health, African Journal of Agricultural Research)

8. Fellowships/Scholarships:

- i. **Commonwealth Academic Fellowship** 2012.
- ii. **Indian National Science Academy (INSA) Visiting Fellowship**, 2004-05
- iii. **Post Doctoral Fellowship** awarded by Council of Scientific and Industrial Research -1999
- iv. **Junior Research Fellowship**, University Grant Commission, New Delhi -1991
- v. **Senior Research Fellowship**, University Grant Commission, New Delhi -1993

9. No. of Research Publications:

- ❖ Papers in journals : 54
- ❖ In conference proceedings : 50
- ❖ Invited/key-note addresses : 14
- ❖ List of best 05 publications :

- i. **Singh A.K.**, Hasnain S.I. and Banerjee D.K. (1999) Grain size and geochemical partitioning of heavy metals in Damodar river sediments, India, *Environmental Geology*, 39:90-98.
- ii. **Singh A.K.** and Mandal G.C. (2007) Chemical characterization of wet precipitation events and deposition of pollutants in coal mining region, India. *Journal of Atmospheric Chemistry*, 59:1-23.
- iii. **Singh A.K.**, Mondal G.C., Singh T.B., Tewary B.K. and Sinha A. (2008) Major ion chemistry, weathering processes and water quality assessment in upper catchment of Damodar River basin, India. *Environmental Geology*, 54:745-758.
- iv. **Singh A.K.**, Mahato M.K., Neogi B., Mondal G.C. and Singh T.B. (2011) Hydrogeochemistry, elemental flux and quality assessment of mine water in the Pootkee-Balihari mining area, Jharia coalfield, India. *Mine Water and the Environment*, 30:197-207
- v. Giri S. and **Singh A.K.** (2014) Risk Assessment, statistical source identification and seasonal fluctuation of dissolved metals in the Subarnarekha River, India. *Journal of Hazardous Materials*, 265:305-314.

10. Number of Books authored/edited: Two

11. (a) No. of Patents granted/applied for:

(b) Technologies developed, Licensed and/or commercialized:

12. Foreign visits:

- | | |
|------------------------------------|------------------------------------|
| 1. Perugia University, Italy 2007 | 2. Birmingham University, UK, 1999 |
| 3. ICIMOD, Kathmandu, Nepal, 1998 | 4. University of Mauritius, 2010 |
| 5. New Castle University, UK, 2012 | 6. Perkin Elmer Center, Singapore |

13. Details of Professional memberships:

- 1. Member of the International Association of Hydrological Science (IAHS).

2. Member of Geological Society of India, Bangalore

14. **Major contributions:** (Max. 150 words)

The major research area includes environmental geosciences to understand the recent earth surface processes and human impacts on natural resources including soil, sediments and water. Initially worked on the geochemical aspects of high altitude Himalayan glaciers and river basins for understanding the weathering and solute acquisition processes and transfer of solute and sediment loads from the glacierized catchments. Further, our work on the Domodar River basin, describes the source and mechanism controlling the surface and sub-surface water chemistry and impacts of mining and industrial activities on the water and sediment quality. Study on grain size and geochemical partitioning of heavy metals in bed sediments of the Damodar River and road dusts from mining areas have shown that in the contaminant environment even coarser size sediments may accumulate similar or higher metal concentration due to longer residence time and presence of coarser fraction of mine wastes. The occurrence of acidic rain events in India's richest coal mining belt during late monsoon season was reported for the first time in our investigation on rain water chemistry over Dhanbad-Bokaro region. pH of the rainwater was found well above the reference pH (5.6) during the non-monsoon and early phase of monsoon, but during the late and high rainfall periods, pH tendency was towards acidity (<5.6 pH) indicating the non-availability of proper neutralizer for acidic ions.

In the mining operations, huge quantities of water have been pumped out from mine sumps and pits to provide working face and to facilitate safe mining. Heavy pumping and discharge of mine water into natural drain caused many environmental problems including water resource depletion and contamination which create scarcity of potable water in mining areas. A multi-institutional project on "*Development of cost effective mine water reclamation technology for providing safe drinking water*" has been undertaken under XI Five Year Plan (2007-12) from CSIR, New Delhi. In this project, we have generated mine water quality database for the coal mine water of Damodar valley coalfields, identified the undesirable constituents present in the mine water and developed a cost effective treatment technology to reclaim mine water for drinking uses. To demonstrate the developed technology, a pilot plant of 4000 liter/hr capacity for mine water reclamation has been commissioning at Pootkee-Balihari mining area of Jharia coalfield to provide safe drinking water for nearby villagers.

15. **Technologies and Products/Services:**

- (i) Developed: 01
- (ii) Licensed:
- (iii) Commercialized:

16. **Designs and Prototype Developed:**

17. **Honors and awards won for technological contributions or sociological impact of R&D:** The developed mine water treatment technology by CSIR-CIMFR has been selected by the PMO for further deployment to solve the potable water availability problem in mining areas.



Signature