IN THE HIGH COURT OF MADHYA PRADESH
PRINCIPAL SEAT AT JABALPUR

Writ Petition No. ……...../2009 (P.I.L.)

Petitioners:

(1) Shailendra Pradhan
s/o Late Shri P.D. Pradhan,
Vill. Ahmedpur Kalan,
Hoshangabad Road,
Bhopal (Madhya Pradesh)

(2) Anil Chawla
s/o Shri M.M. Chawla
A-491, Shahpura,
Bhopal – 462 039 (Madhya Pradesh)

vs.

Respondents:

(1) Election Commission of India,
Nirvachan Sadan,
Ashoka Road,
New Delhi – 110 001

(2) The Chief Electoral Officer, Madhya Pradesh
Nirvacahan Sadan,
17, Arera Hills, Bhopal

(3) Bharat Electronics Limited,
Outer Ring Road,
Nagavara, Bangalore – 560045

(4) Electronics Corporation of India Limited,
PO.ECIL,
Hyderabad - 500 062

INDEX

3.	Reply dated 10th February 2009 sent by Respondent No. 1 to the Petitioners	P2	27
4.	Copy of Paper Titled “Analysis of an Electronic Voting System”	P3	28-50
5.	Affidavit of Mr. Deepak Pal voter of booth no. 32 in Bhopal west-south constituency	P4	51
6.	Affidavit of Mr. Sheikh Rafik voter of booth no. 32 in Bhopal west-south constituency	P5	52
7.	Affidavit of Mr. Amjad Khan voter of booth no. 32 in Bhopal west-south constituency	P6	53
8.	Affidavit of Mr. Jalal Khan voter of booth no. 32 in Bhopal west-south constituency	P7	54
9.	Affidavit of Mr. Kale Khan voter of booth no. 32 in Bhopal west-south constituency	P8	55
10.	Affidavit of Mr. Ramesh Chandra Verma voter of booth no. 32 in Bhopal west-south constituency	P9	56
11.	Affidavit of Mrs. Lalpati Verma voter of booth no. 32 in Bhopal west-south constituency	P10	57
12.	Affidavit of Mr. Akram Khan voter of booth no. 32 in Bhopal west-south constituency	P11	58
13.	Affidavit of Mr. Shabbir Khan voter of booth no. 32 in Bhopal west-south constituency	P12	59
14.	Affidavit of Mr. Mithun Nahar voter of booth no. 32 in Bhopal west-south constituency	P13	60

15.	Affidavit of Mr. Mukesh Chandra Verma voter of booth no. 32 in Bhopal west-south constituency	P14	61
17.	Copy of voter list of Booth No. 32 of Bhopal south-west constituency	P15	62-103
18.	Certified True Copy of result of 152 Bhopal south-west constituency for election held in 2008 for Vidhan Sabha	P16	104-115
19.	Wakalatnama	-	116

Bhopal

Date:..... PETITIONERS

IN THE HIGH COURT OF MADHYA PRADESH
PRINCIPAL SEAT AT JABALPUR

Writ Petition No. ……...../2009 (P.I.L.)

Cause Title

Petitioners:

1. Shailendra Pradhan,

   Aged about 60 years,

   s/o Late Shri P.D. Pradhan,

   Occupation – Social & Political Activist, Business

   Vill. Ahmedpur Kalan,

   Hoshangabad Road,

   Bhopal (Madhya Pradesh)

   Fax 0755-2542105

   Email – suhaspradhan@hotmail.com

2. Anil Chawla

   Aged about 50 years

   s/o Shri M.M. Chawla,

   Occupation – Social & Political Activist, Service

   A-491, Shahpura,

   Bhopal – 462 039 (Madhya Pradesh),

   Fax – 0755-2467485

   Email – samarthbharatparty@gmail.com

vs.

Respondents: (1) Election Commission of India,

Nirvachan Sadan,

Ashoka Road,

New Delhi – 110 001

Fax No. 011-23713412

Email – feedback@eci.gov.in

(2) The Chief Electoral Officer, Madhya Pradesh

Nirvacahan Sadan,

17, Arera Hills, Bhopal

Fax No. 0755-2555162

(3) Bharat Electronics Limited,

Outer Ring Road,

Nagavara, Bangalore – 560045

(4) Electronics Corporation of India Limited,

PO.ECIL,

Hyderabad - 500 062

Email ecilweb@ecil.co.on

Regular Public Interest Litigation Petition

1. Particulars of the cause / order against which the petition is made:

(1) Date of Order / Notification / Circular / Policy / Decision etc. : Not known

(2) Passed in (Case or File Number) : Not known

(3) Passed by (Name and designation of the Court, Authority, Tribunal etc. : Election Commission of India (Respondent No. 1)

(4) Subject Matter in brief : Respondent No. 1 has decided to use Electronic Voting Machines in all elections. The present petition raises doubts about whether the machines and related systems, procedures and personnel are fully reliable, foolproof, hacker-proof, tamperproof and yield results with zero probability of error.

2. The antecedents of the Petitioners:

(1) That the petitioners are citizens of India. Both petitioners are qualified engineers and are also law graduates (though not registered as advocates). Both are social and

political activists. Petitioner No. 1 has contested various elections including the 2008 elections to Madhya Pradesh Assembly and has also been a Member of Legislative Assembly. Petitioner No. 2 is an author. His articles on social, political and philosophical issues are published by newspapers across the country. His works are also available on Internet.

(2) The present petition under Article 226 of the Constitution of India is being filed by way of public interest litigation and the petitioner has no personal interest. The petition is being filed in the interest of free and fair elections and for ensuring and strengthening the trust that citizens of India have in elections, democracy and constitutional setup.

(3) That the petitioners are filing the present petition on their own and not at the instance of someone else. The litigation cost, including the advocate's fee and the traveling expenses of the lawyers, if any, are being borne by the petitioners themselves.

3. Facts in brief, constituting the cause:

3.1. Electronic Voting Machines (hereinafter called as "EVMs") were introduced in the country in 1998. During November

1998, EVMs were used for elections to 16 constituencies to the assemblies in three states – Madhya Pradesh, Rajasthan and NCT of Delhi. Subsequently, in a step-wise process EVMs were introduced for almost all elections throughout the country. EVMs have been used in the recent elections to the assemblies to states of Madhya Pradesh and other states. EVMs have been used for the last elections to Lok Sabha and are also likely to be used for the forthcoming Parliamentary elections.

3.2. As per the website of Respondent No. 1, "*The EVMs have been devised and designed by Election Commission in collaboration with two Public Sector undertakings viz., Bharat Electronics Ltd., Bangalore and Electronic Corporation of India Ltd., Hyderabad after a series of meetings, test-checking of the prototypes and extensive field trials. The EVMs are now manufactured by the above two undertakings.*" No further details are furnished by any of the Respondents on their respective websites about testing, verification and audit of the EVMs.

3.3. The Petitioners sent a Notice (Annexure P1) dated 17 January 2009 to the Respondents asking them for the

details of testing, verification and audit of EVM's adopted by them. The Respondents have replied vide letter no. 51/8/16/9/2009-EMS/2346 dated 10th February 2009 (Annexure P2). In the reply the respondent no. 1 has effectively stated the following facts:

i) There has never been any independent third party testing, verification or audit of EVMs.

ii) The EVMs were evaluated by an "Expert Committee" about 19 years ago, when EVMs were either at concept stage or at prototype stage. There has never been any other technical evaluation or research or studies in the working of EVMs ever since then.

iii) The machines do not have a voter-verifiable audit system. Instead there is only a court-verifiable audit system, which has also been resorted to only once so far (On order of Kerala High Court, E.P. No. 4 of 2001).

iv) The Respondent No. 1 states, "*It is technically and mechanically not possible to re-programme the EVMs. The programme in EVMs is embedded / fused in the micro controller, which is one time programmable*

device and cannot be read / altered. The Expert Committee had also opined that the machine is fool proof and secure system without any possibility of tampering."

v) The Respondent No. 1 states, "*The voter may file petition before the Hon'ble High Court concerned before 45 days from the declaration of results of the election under Section 80 of Representation of People Act, 1951*".

3.4. There is no basis for the belief of the Respondent No. 1 that embedded / fused programmes are hacker / tamper proof.

3.5. It is practically impossible to make any machine which is 100.000000 per cent reliable, foolproof and hacker-proof.

3.6. Testing, verification and audit are attempts to quantify the likely error probability.

3.7. <u>TESTING</u> - For all machines and especially electronic machines, testing is done at the following stages:

a) Prototype approval (This is often done by machine designer, machine manufacturer, consumer / user and

third-parties, which may include reputed testing houses, technical institutes, universities etc.)

b) Post-production Testing of each machine at manufacturer's premises by manufacturer

c) Testing by consumer / user / third parties before accepting delivery of machines

d) Testing at periodic intervals during useful life of machines

3.8. VERIFICATION – For all machines that perform a critical function, it is necessary that performance of the machines is verified at pre-prototype-approval, post-production as well as at regular periods during useful life of the machines by competent independent agencies to ensure that the results given by the machines are reliable and have a reasonably low probability of error.

3.9. AUDIT – Considering the fact that probability of error is never zero, it has become an accepted principle that results produced by any machine or any other machine-based system must be subject to an audit. For example, in many states of USA, as soon as a voter casts a vote using

an EVM, a printout is generated; the printout is put into a ballot box and is used for audit of EVM generated results.

3.10. SECURITY ANALYSIS STUDIES – Computer manufacturers and other electronic system manufacturers use ethical hackers (who attempt to hack through their computer programmes / electronic systems) to carry out studies of security analysis or vulnerability of their systems. Hackers are extremely creative and it is impossible for any manufacturer or reasonable user to imagine the means that a person with malicious intent and determination may deploy. For example, it has been seen that electricity meters / autorickshaw meters are routinely tampered with in India by road-side mechanics – people who have no rocket-science-expertise.

3.11. WEATHER, MAGNETIC FIELD, ELECTRIC FIELD AND IMPACT RESISTANCE – All electronic machines that perform critical functions are tested at each stage of testing and verification for resistance to temperature fluctuations, moisture-stress, magnetic fields, electric fields and different types of impacts. It seems obvious that an EVM must satisfy these tests not only at the prototype-

approval stage, but also post-production and also at periodic intervals during the life of the EVM.

3.12. No independent agency has carried out any of the checks described above in 5.7-5.11. If the respondents themselves have carried out such tests, they were carried out only at prototype-approval stage and never thereafter. If such checks had ever been carried out, the procedures adopted and the results achieved therein have not been disclosed to anyone.

3.13. The petitioners (or any independent research agency / university / technical institute) cannot test or do studies on the security aspects of EVMs since the EVMs are not available in the market and the respondents do not cooperate with any efforts to conduct independent research in the functioning of EVMs.

3.14. The Respondents seem to convey that the EVMs have a ZERO probability of error, while technically speaking it is extremely difficult to even build machines that have an error probability of less than ±1 in 1 million or reliability in the range of 99.999999 to 100.000000 per cent.

3.15. None of the developed countries (including USA and countries of Europe) claim to have developed an EVM with ZERO error as Respondents seem to convey about EVMs used in India.

3.16. The understanding of technical aspects related to security aspects of electronic machines and embedded systems has grown enormously over the past 19 years. While two decades ago, hacking was almost unknown, today it is accepted as a harsh reality.

3.17. Academic research carried out in respect of electronic voting machines in other countries has clearly demonstrated the vulnerability of such machines to insider as well as outsider threats. Tadayoshi Kohno, Adam Stubblefield, Aviel D. Rubin, and Dan S. Wallach in their paper dated 27 February 2004, “Analysis of an Electronic Voting System” (Annexure P3) write, “*We present a security analysis of the source code to one such machine used in a significant share of the market. Our analysis shows that this voting system is far below even the most minimal security standards applicable in other contexts. We identify several problems including unauthorized*

privilege escalation, incorrect use of cryptography, vulnerabilities to network threats, and poor software development processes. We show that voters, without any insider privileges, can cast unlimited votes without being detected by any mechanisms within the voting terminal software. Furthermore, we show that even the most serious of our outsider attacks could have been discovered and executed without access to the source code. In the face of such attacks, the usual worries about insider threats are not the only concerns; outsiders can do the damage. That said, we demonstrate that the insider threat is also quite considerable, showing that not only can an insider, such as a poll worker, modify the votes, but that insiders can also violate voter privacy and match votes with the voters who cast them. We conclude that this voting system is unsuitable for use in a general election. Any paperless electronic voting system might suffer similar flaws, despite any "certification" it could have otherwise received. We suggest that the best solutions are voting systems having a "voter-verifiable audit trail," where a computerized voting system might print a paper ballot that can be read and verified by the voter."

3.18. Eleven voters from booth no. 32 under Bhopal south-west constituency (no. 152) have solemnly affirmed under oath vide duly notarized affidavits (Annexure P4 to P14) that each of them voted in assembly elections held in 2008 for Petitioner No. 1, who was a candidate in the said elections. The voter list of the said booth is annexed herewith (Annexure P15).

3.19. Petitioner no. 1 received only 3 votes in the said election in the said booth no. 32 under Bhopal south-west constituency (no. 152) in respect of which eleven voters referred to above have submitted affidavit. Certified copy of the results of the election are annexed herewith (Annexure P16).

3.20. In addition to the voters who have given affidavits attached herewith some other voters of the said booth have also orally conveyed to the Petitioner No. 1 that they voted for the Petitioner No. 1. Such voters are, however, not willing to go on record due to fears of persecution by government agencies.

3.21. In many other booths also where Petitioner No. 1 has received votes in single-digit, a significant number

(numbers running in double-digits) of voters have orally conveyed to the Petitioner No. 1 that they voted for the Petitioner No. 1. Such voters are, however, not willing to go on record due to fears of persecution by government agencies.

3.22. Many other candidates in elections to Madhya Pradesh Vidhan Sabha 2008 have told stories of how in localities / booths where scores of people worked actively for their campaigning, they received single-digit votes when results were declared. The stories are unsubstantiated but are adding to the general atmosphere of mistrust and doubts against EVMs.

3.23. The respondents have not given any serious thought to the concept of “Voter-verifiable Audit Trail”, which is accepted internationally as a prerequisite for reliability of any electronic voting system.

3.24. In addition to inherent error probability of EVMs, there is a significant possibility of errors / mistakes / wrong results caused by faults / defects / malicious acts in the procedures and systems adopted at the polling booths as well as by poor training of personnel at the booths. A study

by an independent third-party of the adequacy and efficacy of systems prescribed and adopted by Respondent No. 1 has never been carried out. No evaluation has also been ever carried out about the level of training or about the level of expertise of manpower in using the system.

3.25. An example of possible lacunae in the system of use of EVMs is that a randomized machine distribution list is given to candidates before polling. The list has machine numbers that are assigned to various polling booths. However, at the time of counting machine numbers are not noted. It is learnt that machines are routinely replaced and no information is given to candidates about the machines that are replaced. There is no way that a candidate can verify whether the machines actually used are the same as the ones listed in the list provided to him before the polling date. It may be noted from Annexure P16 that machine numbers are not mentioned in front of any of the booths. The efforts of Petitioner no. 1 to get machine numbers for the booths were futile.

3.26. It was widely reported in media that Governor of Rajasthan had to wait in the 2008 elections for more than half an

hour to cast his vote due to malfunctioning of the concerned EVM.

3.27. Various political leaders (including some senior leaders) of the state of Madhya Pradesh have expressed doubts publicly about efficacy, accuracy and reliability of elections based on EVMs.

4. Source of information:

The source for technical details about systems and procedures for testing, verification and audit are personal knowledge of the petitioners. Annexure P3 is taken from http://avirubin.com/ Annexure P4-P14 were handed over to associates of petitioners by the concerned voters. Annexure P15 and P16 were received by Petitioner No. 1 when he contested the November 2008 election to Madhya Pradesh Legislative Assembly.

5. Nature and extent of injury caused / apprehended:

Any doubts about the accuracy, reliability, foolproofness, hackerproofness, tamperproofness and other such aspects of results produced by electronic voting machines (and systems, procedures and personnel related thereto) causes damage to the trust that voters and citizens have in elections and therefore in

democracy. If voters lose faith in the system of elections, the damage to constitutional setup of the country will be enormous.

6. Issue raised was neither dealt with nor decided:

The petitioners declare that the issue(s) raised in the present petition was neither dealt with nor decided by a Court of law at the instance of the petitioners, or to the best of their knowledge, at the instance of any other person.

7. Any representation etc. made:-

Petitioners sent notice (Annexure P1) dated 17 January 2009 to the respondents asking them for the details of testing, verification and audit of EVM's adopted by them. The Respondent No. 1 has replied vide letter no. 51/8/16/9/2009-EMS/2346 dated 10th February 2009 (Annexure P2)

8. Grounds :

8.1. In a booth where 11 voters are swearing on oath that they voted for a particular candidate, the fact that in the said booth, the particular candidate received only 3 votes raises serious doubts about the accuracy of EVM. This erodes the trust that a voter and the country is expected to have in the machines.

8.2. Performance of EVMs has not been tested or verified or audited by any independent agency with adequate expertise in electronics and embedded systems at any time during the past eighteen years or so.

8.3. The evaluation of EVMs carried out by the expert committee in 1990 was either an evaluation of the concept or was an evaluation of the prototype since it was done before the machines were manufactured at a large scale. Till 1990 machines were never used on a large scale, so the expert committee could not have had the benefit of experience that can only be gained by large scale usage. It is obvious that the expert committee formed an opinion based on data available at that time and the state-of-art of technology as it existed at that time.

8.4. There has been no evaluation of the accuracy and reliability of the EVMs after they were introduced. Any such evaluation can only be carried out if either (a) a parallel voting by paper is carried out or (b) a voter-verified paper print-out is generated for each vote cast. Since no such parallel paper-based voting has ever been carried out in the country, it can be said without any exaggeration that no evaluation of accuracy has ever been carried out.

8.5. No security-analysis of hackability / tamper-proofness of the EVMs has ever been carried out by experts at any time during the past one and a half decades.

8.6. EVMs have not been tested for weather / magnetic field / electric field / impact resistance by either the Respondent No. 1 or 2 or by any independent agency either during the prototype-testing stage or at any time thereafter.

8.7. Technology is never static. What appears impossible on one day may become technologically feasible the next day. It is understandable that in 1990 embedded / fused software microchip technology was considered foolproof, tamperproof and hacker-proof. There can be no basis for assuming that technical skills of hacking / tampering / manipulation continue to remain stagnant at a level of 1990.

8.8. The claims made by Petitioners about reliability, foolproofness, tamper-proofness and hacker-proofness of EVMs are not based on reliable scientific data or research. It is also contradicted by actual experience of voters as well as candidates.

8.9. Possibilities of malicious acts of insiders as well as outsiders have not been studied adequately by the respondents.

8.10. There seem to be sufficient reasons to raise doubts that poor training, carelessness, faulty systems combined with malicious acts of polling staff and other outsiders are leading to distortions in the results produced by EVMs.

8.11. The present system of EVMs has no provision for “voter-verifiable audit trail”. It is not possible for a voter to verify if the vote cast by him has been correctly recorded.

8.12. The provision of court-verifiable audit is grossly inadequate and cannot detect all possible causes of malicious manipulations of EVMs. This is especially so since there is no parallel paper-based trail generated which may be used to audit the results given out by an EVM.

8.13. An Election Petition may be filed by a voter under Section 80 and 81 of Representation of People Act, 1951. Section 81 states, “An election petition calling in question any election may be presented on one or more of the grounds specified in sub-section (1) of section 100 and section 101 to the High Court by any candidate at such election or any elector”. Sections 100 and 101 of the Act do not specify malfunctioning of EVMs as a possible reason for filing of election petition. Hence, the Respondent No. 1 is not correct in stating in reply (Annexure

P2) to the notice of the petitioners that a voter can file a petition under section 80 of the Act.

8.14. Democracy, which is the basic foundation of Constitution, is founded on free and fair elections. The trust of voters in the system of free and fair elections is fundamental to the democratic structure of the country.

8.15. Registration of a voter's vote correctly and accurately is important not only from the aspect of some particular candidate winning or losing an election; It is crucial for retaining the trust of the voters and hence of all people in elections and hence in the democratic structure of the country.

8.16. If in a constituency of 100,000 voters even one vote is wrongly cast due to malfunctioning of either the EVM or the associated system, this may or may not affect the result of the election but it has a cascading effect of erosion of the trust that the country has in democratic systems. So an error of even 1 in 100,000 votes cannot be permitted.

8.17. The Honourable Court is competent under article 226 of the Constitution to issue writ in the matter.

8.18. Petitioners, as citizens of India, are concerned about sanctity of democracy in India. Hence, the petitioners have a Locus Standii in the matter.

9. Details of remedies exhausted:-

The petitioners declare that they have availed all statutory and other remedies.

10. Delay, if any, in filing the petition and explanation therefor:-

The cause of action in this case is arising continuously every time elections using EVMs are held. Hence, it is not possible to state the exact period after the date of accrual of cause of action therefor. There is no specific limitation applicable in the case of writ petitions. Hence, there is no delay in filing the case.

11. Relief(s) Prayed for:

In views of the facts mentioned above, the petitioners pray for the following reliefs:-

a. Kindly issue appropriate writ, order or direction in the nature of mandamus or any other appropriate writ or direction directing that the EVMs be tested, verified and

audited by competent independent agency having expertise in such evaluation;

b. Kindly issue appropriate writ, order or direction in the nature of mandamus or any other appropriate writ or direction directing thorough examination of hackability and tamper-proofness of EVMs by competent independent agency having expertise in such evaluation;

c. Kindly issue appropriate writ, order or direction in the nature of mandamus or any other appropriate writ or direction directing thorough examination of systems, procedures, training and all matters related to the use of EVMs in polling booths focusing in particular on possibilities of malicious damage; and that this examination be carried out by competent independent agency having expertise in such examination;

d. Kindly issue appropriate writ, order or direction in the nature of mandamus or any other appropriate writ or direction directing the Petitioner no. 1 and 2 to provide for Voter-verifiable Audit Trail in all elections where EVMs are used;

e. Kindly issue appropriate writ, order or direction in the nature of mandamus or any other appropriate writ or direction directing the Petitioner no. 1 and 2 in respect of use of EVMs in elections, as the Honourable Court may deem fit, after considering the results of reports of competent independent agencies under (a), (b) and (c) above;

f. Kindly grant any other relief that the Honourable Court may find appropriate.

12. Interim Order, if any prayed for:-

Pending final decision of the petition, the petitioners seek issue of the following interim order:-

a. Use of EVMs in elections be temporarily stopped till results of testing, verification, audit, evaluation, examination are duly considered by the Honourable Court.

13. Caveat :-

That no notice of lodging a caveat by the opposite party is received.

Place: Bhopal
Date:..... PETITIONERS